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# AMERICAN VETERINARY REVIEW

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# AMERICAN VETERINARY REVIEW.

SEPTEMBER, 1909.

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## EDITORIAL.

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### EUROPEAN CHRONICLES.

PARIS, July 15, 1909.

PRACTICAL EDUCATION OF VETERINARIANS.—This important question is one which implies difficulties of realization met in both medicines. But in veterinary, there is a general apprehension that to-day, while professional teaching is as complete as it can be to the scientific point of view, by opposition the practical side of the question is insufficient, on some points at least. It is on that account that it may be interesting to make a concise examination of the manner with which the subject has been treated in the *Berlin Th. Wochens.*, by the learned rector of the high school of veterinary medicine of Berlin, Prof. Schmaltz, and which I find resumed in the *Annales of Bruxelles*.

The suggestions of Rector Schmaltz are certainly deserving of the close attention of the trustees, directors, administrators, etc., of our old and recently organized veterinary schools in America. Our eminent colleague begun by examining the defective situation of the practical education of veterinary students and indicates afterwards the remedies that are applied so far. But for him, none of those are answering the exigencies, greater and greater, that to-day the practice of veterinary medicine demands in country districts, where general instruction is much higher than it used to be.

Placing himself to the point of view of the German schools, Rector Schmaltz considers the various methods which might be

applied to reach the best results with a relative minimum in the sacrifices made in pecuniary and time expenses, for the duration of veterinary studies.

There are three principal methods now in presence: 1st, improvement of the practical teaching in the school itself; 2d, a stage of one year with a practitioner after the obtention of the diploma of veterinarian; 3d, during the studies, a semester exclusively reserved to practical instruction in a given place, in the country.

This last is the plan of Rector Schmaltz.

We will follow him in his considerations of the three methods.

\* \* \*

THE PRACTICAL TEACHING IN THE SCHOOLS includes local and external clinics and exercises of obstetrics.

This organization may be sufficient for schools having a small number of students and when they are situated in agricultural centers, but they do not answer for large schools, as for them the external clinics are always very limited on account of being some distance from the country. And again, outside visits mean too much loss of time for the amount of benefit realized, besides the fact that only few students can take advantage of the opportunities offered. Obstetrics gains nothing either, as it would be difficult to call and bring students by night to cases of parturition.

These are the reasons why Prof. Schmaltz does not believe that the improvements already existing in some schools in that special direction can ever bring a sufficient result.

The second method is the STAGE OF ONE YEAR WITH A PRACTITIONER. This seems at first as the ideal principle. It is an error. If it is used in some cases it is because there is nothing better at hand. A first difficulty is: who shall be the practitioner? He cannot be a veterinarian of the administration, as those have already assistants who they pay very little; and besides they would not be willing to run the chances of a future

severe competition that afterwards one private veterinarian might do them. It must also be remembered that young graduates are not looking for improvement in the service of the administration, but principally in that of practical veterinary medicine, in the medical art proper.

To settle the difficulty it would be better to let the obligatory duration of the stage be fixed by the student himself; and have him select his own practitioner. Evidently then students would select those with whom they would likely learn something. And yet, with all that, as the young assistant would be at the order of his practitioner, most of his time shall belong to him and of course his opportunities for his personal instruction will be limited or would vary according to the circumstances.

The method proposed by Prof. Schmaltz is to impose on the students before the final examination, one extra semester of studies, which shall be strictly practical, and when he will be taught and shown veterinary medicine such as it is met and practiced in the ordinary run of country life.

To realize this idea, the author demands that at every veterinary school there shall be annexed a farm, where students will pass the last or one of the last of the semesters of his studies, to complete its practical instruction under the direction of an "EXTERNAL PROFESSOR."

The advantages resulting from this would be an addition to the medical studies in relation to the practical part of it, an improved knowledge of the exploitation of animals in agricultural centres, and an initiation, *in loco* to country life, to the needs and interests of agriculture. Everyone agrees in saying, that instruction in schools ought to be complete to the practical point of view, but the practical knowledge of the pathology of ruminants and swine, as well as that of obstetrics, can only be obtained by a long stay in the country and not by intermittent and often hasty visits. A continued observation of domestic animals and a daily contact with agricultural people are essential. And not only will the student improve his stock of practical veteri-

nary knowledge in relation to medicine, but he will also in that of zootechny and agronomy.

The student ought to remain on the farm a whole semester. The one preceding his final examination would be the best. The duration of the studies would be extended one semester, but essentially for that practical improvement.

The professor at that farm should be one who, besides extensive scientific knowledge, should also have a well-confirmed practical experience and not less than ten years of practice. The clinical material would be provided not only from the animals of the farm, but also from the surrounding country.

As it is seen, the program of Prof. Schmaltz is a daring one, and above all, one which deserves serious attention. It is already partially existing in some places but it has not yet reached the extensive view entertained by the professor. Will it ever be realized?

If I am not greatly mistaken the existence of the experimental stations which exist in some parts of the United States, and which for some are or might easily be attached to veterinary institutions, could well be made a step in the direction of the realization of Prof. Schmaltz's method. They might readily fill the part of the farm he calls for, and at least serve as an experiment to test the value that would follow for those who would go there. But I am much afraid than an additional stage would rather be unwelcome to students.

\* \* \*

SPECIFIC CHEMICAL THERAPEUTY OF TRYPANOSOMIASIS AND SPIRILLOPSIS.—In the *Archives of Internal Medicine*, Prof. Terry, of Rockefeller Institute of New York, has in a general review considered the various treatments which have been tested in these two groups of infections which have become closely related in the researches of parasitology and therapeutics of the last few years. This review of Prof. Terry, is interesting from the practical point of view, as patients affected with such diseases may fall in the way of the practitioner.

TRYPANOSOMIASIS is the generic term applied to designate the infections caused by the various trypanosomes: *T. GAMBIENSIS* of the sleeping sickness; *T. BRUCEI* of Nagana; *T. EVANSI* of the Surra; *T. EQUINUM* of the disease of Cadaras; *T. EQUIPERDUM* of dourine, etc., etc.

Until 1904 arsenic was the only drug used against trypanosomiasis. But since the works of Ehrlich and Shiga, other products have been employed, which can be arranged into four groups; the colors of benzidine the basic colors of triphenylmethane, the compounds of arsenic and the compounds of antimony.

Among the succedanea of benzine, the most used has been the trpan-red or trypancot, so named on account of its active action upon trypanosomes and its red color.

Of the basic colors of triphenylmethane, the malachite green, the brilliant green and the parafuchsine have been experimented with by Ehrlich, who concluded that the last, the parafuchsine, was the most active but that its curative action remained very weak.

Among the recent compounds of arsenic, atoxyl is the most valuable. Its action made known by Koch has been sufficiently recorded. The important point is that the treatment must be kept up for a long time. Injections of 50 centigrams repeated two days in succession with ten days suspension between each double injection. In light trypanosomiasis, the parasite disappears rapidly from the blood and lymphatics. In severe cases the results are not as good.

Two other preparations have been recommended by Ehrlich, as substitute of atoxyl, the ACETYL-ATOXYL and the PARAXYHENZYLIDE-ATOXYL, which, richer in arsenic than atoxyl, is ten times less toxic.

Among the compounds of antimony, the most active is the double tartrate of sodæ and antimony, which, injected by Plimner and Thompson with rats infected with surra and nagana, found that the trypanosomes had disappeared from the blood between half an hour and two hours. In France, tartar emetic

has also been used. An interesting point to notice in these researches upon the therapy of trypanosomiasis is that the parasite can acquire a marked resistance to the drugs in use. This resistance varies according to the species and Ehrlich divides them into resisting, and weak or susceptible. A single passage through rabbits is sufficient to transform a resisting into a weak trypanosome. These conditions of tenacity or of weakness have no connection with the virulence.

Like trypanosomiasis, SPIRILLOSIS have been submitted to new and various drugs. But differently from the trypanosomiasis, which form an homogeneous group, spirillosis include affections caused by parasites rather different; spirillus, spirochetes, and treponemas and which are related to each other only by morphological and biological analogies.

SPIRILLOSIS of birds, caused by the SPIRILLUM GALLINORUM has been the object of investigations by Uhlenhuth, who considers atoxyl as the best treatment. African fever caused by the SPIRILLUM DUTTONI has been studied experimentally by Vassell, who has obtained good results with trypancot.

European recurrent fever caused by SPIRILLUM OBERMEIER has also been treated by atoxyl.

\* \* \*

TREATMENT OF SERO-FIBRINOUS PLEURISY.—Autoserotherapy has been the subject of a communication of the *Presse Medicale* of which I find allusions in some of our professional journals. The question relates at present, as a means of treatment of sero-fibrinous pleurisy.

Imagined and described by Gilbert, in human medicine, autoserotherapy consists in the subcutaneous injection, in a sick individual, of a few cubic centimeters of its pleuritic effusion, which will promote a more rapid absorption of the effusion in the chest.

This method has given good results with some physicians; and perhaps veterinarians could take advantage of it. The method is simple. With the ordinary attention and on the class-

ical spot, an exploring needle of Pravaz is introduced in the chest and filled. Without removing it entirely, it is carefully introduced under the skin and the contents are injected. The operation is repeated every two days and may be renewed several times, according to cases.

Autoserotherapy stimulates the resorption of acute pleuritic effusion. It has a much more important and more regular action than the simple exploring puncture. Immediately after the first puncture, the quantity of urine secreted is suddenly much increased, as much as three times the amount and sometimes even more. The good effects obtained seemed to be due in great part to the mechanical action of the exploring puncture and specially to the antitoxic and bactericid products contained in the effusion and which are then thrown into the general circulation.

Schnutgen, of Berlin, confirmed its value by a statistic of twenty successes. In man fourteen good results are said to have been realized in fifteen cases of sero-fibrinous pleurisy. It has no influence in hemorrhagic pleurisy, in those with suppurative tendency or in hydrothorax.

The method is so simple that veterinarians might do well in resorting to it. An army veterinarian, Mr. Magnin, has already published one case where he has used it. The subject was treated by auto-serotherapy five and ten grammes of effusion being injected on the neck and he received besides subcutaneous injections of cafeined artificial serum; but notwithstanding died.

Of course, this single case is insufficient to decide as to the value of the method when applied to animals, but others will tell more about it.

Mr. Magnin, however, has obtained valuable information from this single case; viz.: that it is useful to perform the thoracentesis alternatively on one and then on the other side of the chest as the communication between both pleural sacs does not always exist and specially in sero-fibrinous pleurisy where abundant deposits of fibrin may exist.

\* \* \*

OBSERVATIONS ON RABIES.—What a singular and ever-interesting disease rabies is! And how frequent are the various manifestations that one may meet with, where possibilities of error of diagnosis are present.

I have related in these pages many facts which have come to my knowledge, and here again I find in the *Revue Veterinaire*, observations which I must relate.

The first is the case of a cow which has a nervous affection, having some appearance of rabies. She is restless; all of a sudden she becomes nervous, excited by the slightest noise. She has muscular twitchings all over the body. Her eyes glaring and her looks anxious; they look full of fear. There is dorso-lumbar hyperesthesia. Let loose, she starts in a run, turns over herself, her hind quarters are semi-paralized. Placed on observation the symptoms gradually subside and in a month she is about well.

The other observation is one of intermittent rabies in a cow. With her there can be no hesitation in the diagnosis. She has rabies with inco-ordination of motion, excitement at the sight of a dog, efforts to defecation, etc. By degrees, in a few days, she seems to improve, and she is returned to work which she performs very quietly. But suddenly after three weeks she has a second attack of rabies; perfectly similar to the first and from which she died in twenty hours. The diagnosis was confirmed by inoculation of the brain and of the bulb.

The third observation relates a case of three years incubation in a bovine. The diagnosis could not be doubted. The history, the number of cases of rabies connected with the case more or less directly, all prove it. With this animal, death did not occur until the 15th day after paralysis was manifested.

In a fourth observation, the intravenous antirabid vaccination for bovines offers practitioners an example of its value. The method was advocated by Prof. Galtier and consists in the intravenous injection of an emulsion made with the bulb of a rabid dog. The method has been largely experimented with and

has given good results; granting a lasting absolute immunity to herbivorous animals.

A last observation closes this interesting series. It is that of a spontaneous recovery from rabies. One of the dumb form of the disease. A dog had paraplegia, partial paralysis of the larynx, his tongue is hanging from the mouth and yet with all those symptoms he gradually recovered.

I may be in error but I think other cases of similar nature have already been observed. Personally I can recollect of one; but perhaps I had made an error in my diagnosis. In the case above, the history was strongly confirming the diagnosis made from the symptoms and on that account is well worthy being known and deserves to be recorded.

\* \* \*

DIAGNOSIS OF TUBERCULOSIS.—Always important, this subject has comparatively lately been occupying the attention of pathologists. And I fancy specially more in France, where scientists of that nationality have worked considerably on the various methods of the application and practical uses of the tuberculin test. Are we going to arrive at a final conclusion in relation as to which is the best test to resort to? I have already made known the opinion of some. I may to-day present the conclusions of a paper presented by Prof. Lignieres of Buenos Aires, where he advocates a new method which he calls that of the ASSOCIATED REACTIONS. Will they close the series?

CONCLUSIONS: 1st. Tuberculin thermic and local reactions are from the practical point of view the base of the diagnosis of tuberculosis:

2d. One must no longer depend on one reaction; it is absolutely necessary to resort to several of them, which may correct, control, complete each other and specially increase the chances of a positive diagnosis in tuberculous individuals; it is the method of the associated reactions.

3d. The selection in the methods to associate, depends on the conditions in which the operator will be; but in all cases, the

ophthalmo ought to be put to practice and be repeated, if possible. To the result of the thermic reaction by subcutaneous injection, that of the local subcutaneous reaction must always be added.

4th. The diagnosis of tuberculosis rests entirely in the apparition of a clearly positive reaction, whatever this may be. To the practical point of view, negative reactions are worthless against a single clearly positive one with the method of associated reactions. If several are positive, it is evident that the belief of the experimentator in his diagnosis is increased and consequently he will insist in the application of the sanitary measures.

5th. Doubtful reactions are very important; they impose the confinement of the animals that present them so as to submit them to new tests afterwards.

6th. For animals living in the fields or outside, all the year round, ophthalmo reaction is the best method of investigation; it may be repeated very often and allows each time the separation of sick and doubtfuls, with which other means of diagnosis can afterwards be applied.

7th. Local reactions which have no influence upon the thermic reaction, such as the cuti, the dermo and specially the ophthalmo, may be applied shortly before the subcutaneous injection, while local reactions which may have some effect on the general thermic reaction, such as the local subcutaneous and the intra dermo, ought never be resorted to if shortly after, one desires to obtain the result of a classical subcutaneous reaction.

8th. Often all local reactions give positive results in tuberculous subjects which receive at the same time a classical subcutaneous injection. Of those local reactions, the ophthalmo is the one that the subcutaneous injection affects the least and the intradermo the most.

9th. In general, one must wait a certain time before making a local reaction upon an animal which has recently received a classical subcutaneous injection. Three or four days after this

injection, the cuti, dermo and specially the ophthalmic may already be resorted to with success.

The local subcutaneous and the intra dermo are much more influenced by a previous injection of tuberculin; ten days and sometimes more are necessary to have elapsed if better conditions of success are looked for.

10th. One of the methods of associated reactions, among the simplest, most practical and most certain, consists in making at the same time, in the evening, say 8 o'clock, one ophthalmic, then at the base of the neck one dermo and on the same spot the subcutaneous injection of tuberculin. The next morning, 5 or 6 o'clock, the condition of the ocular reaction is taken, then the local subcutaneous and finally the thermic. It is much more difficult for a tuberculous subject to escape this test than with any others.

\* \* \*

BIBLIOGRAPHICAL NOTES: PROF. SCHMALTZ'S ANATOMY.—In March, 1901, page 946 of our 24th volume, it was my great pleasure to call the attention of American veterinarians to the first part, just issued then, of "ATLAS DER ANATOMIE DES PFERDES," by Dr. Reinhold Schmaltz, Professor of Anatomy at the Superior veterinary school of Berlin. To-day it is the second part, which I have the opportunity to consider.

This second part treats of the topographical *Myology* of equines. It is illustrated with the collaboration of Pro. Bruno Heroux, of Leipzig, and of Gustav Heuer, of Berlin, who made the drawings and wood engravings. The well-known house of Richard Schoetz, of Berlin, is publishing it and that is saying what efforts have been spent to make the book appear as it does.

Following the plan taken in the first part, this topographical myology contains no reading descriptive text, but in the thirty-nine plates that illustrate it, the reader finds the entire myology of the trunk and extremities. The plates are numbered as continuation of those that illustrate the first part. Hence in this it begins by plate 24 with the skeleton of the neck and trunk

with the two upper segments of the fore and hind extremities. Plates 25 to 30 illustrate the superficial, middle and deep layers of the muscles of the trunk. Plate 31 illustrates one outside of the chest. The anterior extremity down to the digital region is occupying nine plates. In plates 41 and 42 there are views of the chest, inferior cervical region and intermaxillary space; 43 exposes the under part of the chest and of the abdomen; 44 the inguinal region; 45 the perineal of males and of females; 46 the diaphragm muscle, viewed by its posterior face; 47 and 48 show the loins and the pelvis; 49 the hypogastric region; 50 the interperineal; 51 the inside of the pelvic cavity and of the thigh. From the 52d to the 59th, included, are found various aspects of the different segments of the hind extremities, and the three last plates illustrate the foot in its external and internal various subdivisions.

I have said that there is no descriptive text in the book. First, there is no need for it, as to one who already knows his anatomy, glancing at the plates reads as well as any description. The plates are so true. But with that on each plate besides the duplicate on thin tissue paper which carries and completes the explanation of the typical plate, there is a legend attached to each illustration; kind of explanation and as the accumulation of parts and names might render the clear understanding difficult, the author has on those legends, arranged by numbers corresponding to others in the drawings, arteries, veins, nerves and lymphatics. For although this part of the atlas is principally topographical myology, one finds also in almost all the plates, blood vessels, and nerves, which make the book so thorough and complete that one cannot expect to find in the other parts of the work which will come after anything more complete than what is presented in plates 29 and 30, 47 and 48 and also in others.

The amount of work which had to be realized to arrive at the perfect completion of this atlas the number of minute and delicate dissections that had to be accomplished, the correctness with which the true nature has been represented, the fine work

of the artists, the drawings so natural of the muscles, the various coloration of the blood vessels, nerves, etc., etc., everything explain and plead favorably for the long length of time that has elapsed between the publication of those two parts, and we feel that this atlas of Prof. Schmaltz is to-day *the* only one of its kind and that it will remain for many years to come *the* only book which any veterinarian can consult to refresh his anatomical knowledge. As indeed a glance at any of the plates will permit either the advanced student ready for an examination, or again the practitioner on the verge of an operation, to review a dissected region just as well if not better, than if it was in the dissecting room and upon the best anatomical preparation.

The Atlas of Prof. Schmaltz is a valuable acquisition to veterinary literature. It is an international work which no doubt all veterinarians will be glad to get and which will necessarily urge the completion of the book and the publication of the two last parts at an early day.

\* \* \*

PURE MILK AND THE PUBLIC HEALTH, by Prof. Archibald Robinson Ward, B. S.A., D. V.M., is a new book recently issued by the house of Taylor and Carpenter, of Ithaca.

Graduated from the State veterinary college at Cornell University, the author has dedicated his work to Director V. A. Moore, his teacher.

This time it is from California that this little valuable addition to the science of Milk Hygiene is offered as an attempt to assemble together the essential facts for the information of the health officer and others directly concerned in the crusade for better milk. The great progress that has lately been made in every part of the globe in relation to the milk question has given rise to immense improvements; and yet everywhere those who are interested in it are anxious to know what others are doing in solving the subject of the milk control; that is of milk and dairy inspection.

"PURE MILK" contains nearly 200 pages of an appendix. There are seventeen illustrations. The subjects are divided into eleven chapters: Contamination of the milk, Changes caused by bacteria, Epidemic diseases transmitted by milk, Bovine tuberculosis and other cattle diseases, Municipal sanitary control of milk, Pasteurization, Microscopic tests, Bacteriological examination, Certified milk, Analysis and Adulterations.

This presentation of the contents tells how much interesting material can be found in the book of Doctor Ward, and while some will recognize in it, parts which have been found somewhere else, it must be remembered that it has been the principal object of the author to only make an attempt to gather the most essential facts already known.

The appendix contains Ordinances in California, in Chicago, in Duluth, etc., etc.

The book is neatly gotten up, the illustrations are good and the reading quite easy and interesting.

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BIBLIOGRAPHIC ACKNOWLEDGMENTS.—Bulletin No. 113 of the Agricultural Experimental Station of the University of Minnesota, Veterinary Division, containing an article on Hog cholera and Vaccine by Dr. M. H. Reynolds. The Quarterly Bulletin of the Chicago Veterinary College, Vol. 7, No. 1. Circular 148 from the Bureau of Animal Industry, a practical demonstration of a method for controlling the cattle tick, by W. D. Hunter and J. D. Mitchell. The Louisiana Bulletin 115 with the principles and practice of feeding, including our available stock foods, by Dr. W. H. Dalrymple. The second annual report of State Veterinarian of Alabama, Dr. C. A. Cary. Veterinary Notes from Parke, Davies & Co. "Examiner" of Launceston (Australia), with articles from E. A. Weston, G. M. V.C.

A. L.

## PROF. LIAUTARD GREATLY HONORED.

Ministère des affaires étrangères.

Par décret du Président de la République en date du 4 août 1909, rendu sur la proposition du ministre des affaires étrangères, et vu la déclaration du conseil de l'ordre de la Légion d'honneur du 31 juillet 1909, portant que la nomination comprise dans le présent décret est faite en conformité des lois, décrets et règlements en vigueur, est nommé chevalier dans l'ordre national de la Légion d'honneur, M. Liautard (Alexandre-François-Augustin), médecin vétérinaire à New York, directeur de l' " American Veterinary Collège " : services distingués rendus à l'influence et aux intérêts français en Amérique depuis 34 ans.—From the *Journal Officiel de la République France* (organ of the Government), August 6, 1909.

The above clipping from the official journal of the Republic of France will convey to the friends of Dr. Liautard who read French, the very great honor of which he has recently been the recipient. The doctor's modesty would not permit him to write an account of it for his many friends in America, so we have undertaken to extract the information for those who do not read French, which is about as follows:

By a decree of the President of the Republic of August 4, 1909, rendered on the proposition of the Minister of Foreign Affairs, and the consul of the Order of the Legion of Honor, Prof. Liautard was named chevalier in the National Order of the Legion of Honor in recognition of his distinction as a veterinarian and his distinguished services as director of the American Veterinary College and his good influence in the interests of France in America for thirty-four years. We understand that to be a chevalier of the National Order of the Legion of Honor is a rare distinction in France, and the recipient of it is paid a high tribute by his countrymen, and we voice the sentiment of the entire veterinary profession in America when we congratulate Dr. Liautard.

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### INDEMNITY FOR GLANDERED HORSES.

By an act of the legislature passed in May last, the state of New York, after October 1, 1909, will pay an indemnity of 80 per cent. of the appraised value on glandered horses reported and destroyed, in which glanders was not manifest by clinical symptoms, and 50 per cent. of the appraised value on those in which the disease is manifest clinically. In no case shall the appraisal of a horse exceed one hundred and twenty dollars. While the amount paid by the state is not a large sum, it will be a material assistance in the majority of instances in replacing the animals destroyed, and will be a stimulus toward the prompt reporting of cases by owners who might otherwise, for mercenary reasons, endeavor to get rid of them for a small amount, thereby disseminating the disease by starting new centers of infection. The same law applies similarly to tuberculosis in cattle; the maximum appraisal value in that case being seventy-five dollars, and the different percentages being determined by the existence of the disease in a localized or generalized form, the former getting 80 per cent. and the latter 50 per cent.

The fact that glanders is so prevalent, (in the larger cities of the state particularly) is evidence of the necessity of this measure. Veterinarians throughout the state are being furnished blank forms for convenience in reporting infectious or communicable diseases, upon which, when they are confronted with a case of glanders for instance, they immediately enter a record of it, giving the name and address of the person in charge of the horse and the name and address of the owner, if it be different, (as in the case of a horse at a boarding stable) and any other information they may desire to convey, and mail it at once to the Veterinary Bureau of the Department of Agriculture at Albany; which bureau, will immediately detail a department veterinarian in the locality from which the report came, to take charge of the matter. This will relieve the local veterinarian of all responsibility, and place his client in a position to benefit by the provisions of the state; and therefore merits the hearty co-operation

of the practitioner. In New York City, where glanders has been rife for several years, there are three resident veterinarians from the Department of Agriculture. The amount of compensation to owners will be determined by the stage of the disease, as revealed by post-mortem examinations. The mutual advantage accruing from this law to the state, the practitioner and his client, is apparent; and we predict an appreciable decrease in glanders, as well as other contagious diseases in the Empire state by October 1, 1910.

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**EDITORIAL COMMENT.**—We have been favored with some advance pages of the second edition of "The Production and Handling of Clean Milk, including Practical Milk Inspection," by Kenelm Winslow, M. D., M. D. V., B. A. S., and "Essentials of Milk Bacteriology," by H. W. Hill, M. D., from the publishers, the Wm. R. Jenkins Co., New York; which we have perused with much pleasure, both in the reading of them and in the anticipation of the excellent practical guide to the production, handling and distribution of clean milk that will soon be within the reach of veterinarians and scientific dairymen. At this time, when the attention of veterinarians, scientists and dairymen are being directed toward the importance of cleanliness in the production of milk, and the devastation and infant mortality as a result of dirty milk, this book will be most welcome. It contains chapters on "Germs in Their General Relation to Milk," "Composition of Milk and Cream and Their Products," "Milk Products," "Feeding for Milk," "Housing and Good Care of Cows," "Handling of Milk and Cream," "Cost of Producing and Handling Milk," "Some Hints Concerning Milk Distribution," "Milk Inspection," "Essentials of Milk Bacteriology" and an Appendix, giving detailed descriptions and plans for barns, milk houses and city dairies, a description of the milking machine, and much other useful knowledge concerning dairy matters.

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This book has 367 pages and 101 illustrations, including one colored and sixteen full-page plates, and is one of the most valuable additions in the form of general information on the production of milk, embracing the whole subject of feeding, housing and caring for the cows, as well as the care of the milk that has yet been produced. It can be read and understood by dairy-men, agricultural and veterinary students, practitioners, teachers and bacteriologists, as it embraces all phases of the subject.

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HORSE ACCIDENTALLY SELF SHOT.—A saddle horse ridden by its owner, W. Jackson, of Butte, Mont., stepped upon a ball cartridge as he was jogging down Main street, exploding it. The bullet passed through the horse's body, emerging close to Jackson's leg. The animal almost bled to death before a veterinary surgeon could be found to stop the flow.—*New York World*, Sunday, July 25, 1909.

J. P. CLEARY, a farmer near Palouse, Wash., owns a seven-year-old Jersey cow which has made a remarkable record, giving birth to five calves in less than two years. In June, 1907, she gave birth to twin calves. The following June she bore another calf and recently when Mr. Cleary went to his barn he found her mooing over two more calves. Four of the calves are heifers, and all have lived. The cow is valuable for the abundance of rich milk she gives.—*Horn and Hoof*, July, 1909.

COMMENDS NEW JERSEY LIVE STOCK COMMISSION FOR IMPORTING PERCHERONS AND CLYDESDALES.—Referring to the interesting question as to whether trotting bred horses or draughters are best suited for the farmers of the East to raise and use, a Western horseman of national prominence, who has been identified with draught horse breeding ever since the Percherons and Clydesdales were introduced in the Mississippi Valley writes to the *Herald* in unqualified commendation of the action of the Live Stock Commission of New Jersey in importing such stallions for stud service in that State. Expressing the opinion that the soil of the Atlantic States is better adapted than that of the prairies to the production of draughters and that no other branch of animal husbandry will yield better profits to the Eastern breeder \* \* \*—*New York Herald*, Sunday, July 25, 1909.

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Indexed.

## ORIGINAL ARTICLES.

### THE ERADICATION OF CATTLE TICKS IN THE SOUTH.

By W. P. ELLENBERGER, NASHVILLE, TENN.

While the veterinarians of the South have probably all had the opportunity of seeing cases of Texas fever and have taken more or less interest in the matter of tick eradication, those of the North have not likely given this subject much attention, nor have many of them had the opportunity of seeing cases of the disease. This article is therefore made to cover the subject in a general way rather than to specialize on some one phase of it.

On account of the great extent to which the Southern cattle ticks (*Margaropus annulatus*) interfere with the cattle industry of our country, and the immense annual loss caused by them, their eradication must be looked upon as a national affair rather than simply as a local matter.

Tick eradication is of much importance to our country as a whole, as it is absolutely necessary to the welfare of the cattle industry, and indirectly to the advancement of agriculture in the infested district. Investigations and experiments have demonstrated the practicability and advisability of eradicating this pest, and the officers of the tick-infested states, who have charge of the agricultural and live stock matters, have urged tick eradication for several years.

To accomplish the eradication of this pest the local authorities of the tick-infested district need the co-operation of the Federal Government both in the matter of furnishing experienced men and funds, as the local authorities have not the necessary organization and it is not likely that the state legislatures will appropriate sufficient funds to successfully conduct the work without such government aid. The matter was therefore taken up by the state authorities of the quarantined district and Con-

gress was petitioned to appropriate funds to be used by the Secretary of Agriculture through the organization of the Bureau of Animal Industry in co-operation with the local authorities in the infected district in the eradication of ticks.

**LOSSES CAUSED BY THE CATTLE TICK.**—The importance of eradicating the cattle ticks is at once apparent when the losses caused by them are taken into consideration. The whole economic condition of the South is affected. The principal losses are briefly mentioned as follows:

Losses caused by death from Texas fever of susceptible cattle within the quarantine district, and from the occasional accidental outbreak of the disease above the quarantine line.

Losses resulting from the lower price paid on the Northern markets for all cattle from the quarantined district on account of the restrictions placed on them, and this reverts in practically setting the price of such cattle within the quarantined district.

Losses due to the cattle tick as an external parasite causing impoverishment of the blood, and irritation, resulting in the stunted condition of tick infested cattle. The beef production of the infected district is consequently greatly reduced both in quantity and in quality.

Losses due to the large decrease in milk production of tick-infested Southern dairy cows.

Losses sustained by Southern breeders of pure bred cattle. Such cattle being generally susceptible to Texas fever many die from the disease. Sales are restricted to local markets where there is not much demand for such susceptible cattle. Exhibitions are excellent advertisements, but the breeder of cattle in the infected district is barred from showing his cattle outside of the quarantined district on account of the quarantine restrictions, and he is practically barred from showing them at fairs within the quarantined district on account of the danger of exposure to infection.

Losses due to the expenses incurred each year by both the government and the various infected states in establishing quar-

antine lines and in enforcing the necessary regulations to prevent the spread of Texas fever.

Losses due to increased freight rates on account of the necessary cleaning and disinfection of cars, and stock pens, and maintaining separate yards for Southern cattle.

These appalling losses, estimated at from \$60,000,000 to \$100,000,000 annually, can be entirely prevented by the eradication of ticks. This can be accomplished at a small proportionate cost, and every dollar expended be returned many fold during each succeeding year.

**BENEFITS FROM TICK ERADICATION.**—It is hardly possible to estimate the immense benefits that may reasonably be expected to accrue from the accomplishment of tick eradication.

Besides entirely effacing the actual losses, the most important of which have been mentioned, it would also prevent the potential losses, which may be considered as the difference between the cattle industry and the agricultural conditions of the infected territory to-day and the extent to which they would no doubt develop with the pest exterminated.

Following the eradication of ticks there will no doubt soon be a very large increase in the number and grade of cattle in the territory now quarantined. At present there is but little inducement for the establishment of pure bred herds in the infected district, but with the dangers of infection removed, and unrestricted markets obtained, there should be many such herds established.

**LAWs AND REGULATIONS.**—It is provided by the organic act of the Bureau of Animal Industry that whenever the plans and methods of the Secretary of Agriculture shall be accepted by any state or territory in which pleuro-pneumonia or other contagious or infectious disease exists, or when such state or territory shall have adopted plans and methods for the suppression and extirpation of said diseases, and such plans and methods shall be accepted by the Secretary of Agriculture, and whenever the Governor or other properly constituted authorities signify their readiness to co-operate for the extirpation of any contagious, infec-

tious or communicable disease, *then* the Secretary of Agriculture is authorized to expend Federal appropriations in that state or territory on investigations of the diseases and on such disinfection and quarantine measures as may be necessary to prevent the spread of the diseases from one state or territory into another.

Under our form of government the control and eradication of diseases of live stock within a state are entirely within the police power of the state, and are only subject to such regulations by the Federal government as may be necessary and incidental to regulating interstate traffic.

To expend Federal appropriation for tick eradication, and use the organization of the Bureau of Animal Industry to assist the states, it is proper and necessary that the inspectors and other employees of the Bureau assigned to such work, should have legal authority to enforce such quarantine and disinfection regulations as may be necessary and agreed upon by the government and the state. Without such authority the Bureau employees can not do effective work, and the Federal Government cannot co-operate with states not provided with adequate legislation.

The laws of the several tick-infested states should therefore provide as follows:

1. That local officers be authorized and empowered to enter premises to inspect live stock; to enforce the quarantine of counties, districts, farms and ranches, and to control the movement of live stock therefrom.
2. That local officers be empowered to enforce such disinfection of animals and premises as may be necessary.
3. That the proper state officials be authorized to issue rules and regulations establishing and maintaining quarantine lines.
4. That states may confer authority upon Federal employees to act, without compensation from the states, as officers of the states in enforcing the state laws and regulations.
5. That the county commissioners, or other proper local officials, be authorized to appropriate funds to assist in the work.

**THE LIFE HISTORY OF THE CATTLE TICK.**—This is a very important part of the subject, as plans for the eradication of the tick must necessarily be based on its life history which is divided into various periods and stages.

The preoviposition period, which is from the dropping of the adult tick from the host to the beginning of oviposition, ranges from two to forty days. In summer it is three or four days and in winter over twenty days.

The oviposition period, or the time occupied in egg laying, ranges from six to seventy days. In summer it averages ten or eleven days. In winter it is two or three times as long.

The incubation period varies from 17 to 170 days, depending upon the temperature and moisture. The weather in July being ordinarily the most favorable. A temperature of 32 degrees F. for a very short period does not prevent the hatching of viable eggs. Submergence under water does not prevent the hatching of eggs, nor materially change the incubation period.

The non-parasitic period is the time which elapses before the tick reaches a host. A few hours after hatching the larval ticks climb upon blades of grass, sticks or other objects, collecting in masses and waiting for weeks or months for a host. Those develop only that attach themselves to cattle, or rarely to a few other animals, as the horse or mule. It is known that these ticks may live without a host from 43 to 180 days. They avoid direct sunlight. Seed ticks may endure submergence under water from 10 to 157 days. They will survive a freezing temperature for a short period (one hour or more).

The parasitic period is the time from attachment to the dropping of the tick from the host, and ranges from 21 to 58 days. The average is from 26 to 43 days and is longer in winter than in summer. The principal variation in development occurs in the adult stage.

The first molt occurs in from 7 to 12 days, changing from the larval to the nymphal stage, after which the tick has eight instead of six legs. The second molt occurs in from five to ten

days after the first, and is then in the adult stage. The development in the adult stage may be very rapid.

Ticks are quite resistant to both heat and cold, as also are the eggs, but dryness, especially with heat, is destructive to both. Engorged female ticks withstand submergence under water from 24 to 100 hours, after which they may deposit viable eggs.

This information regarding the life history of the cattle tick is taken from Bulletin No. 72, by Hunter and Hooker of the Bureau of Entomology, U. S. Dept. of Agriculture. Their investigations were conducted far South, and it is likely that the time of the various stages of development of the tick further north is somewhat different.

**PLANS FOR CONDUCTING THE WORK.**—Plans and methods which may be formulated for conducting the work of tick eradication must be based upon the life history of the cattle tick to be effective. To carry out such plans and methods it is quite necessary that adequate state laws and regulations be provided, for while many self-sacrificing citizens will voluntarily submit to the necessary expense and inconvenience connected with the disinfection, and quarantine, and restrictions on the movement of their cattle, others will not observe the instructions of inspectors unless it is plainly shown that inspectors have legal authority to enforce the same.

Competent inspectors, and as many of them as possible, should be furnished by the state and county authorities as well as by the government, and the local as well as the Bureau inspectors assigned to duty in the same section should be under the direction of the Bureau office having immediate supervision over such section. This is to avoid the confusion that would result from men receiving orders from two sources. Care should be used by the authorities to select men having the necessary qualifications: for incompetent and dishonest inspectors are a hindrance instead of a help to the work.

The work should be taken up in as large a territory as the

available number of inspectors can satisfactorily cover, beginning in sections where the conditions with reference to the amount of infection, and co-operation of the local authorities and citizens, are most favorable. The favorable sections are usually found adjacent to the free area.

Numerous investigations and experiments have been conducted by which it has been proved without a doubt that the cattle tick is the only natural means by which Texas fever is transmitted, and that by completely severing the relation between cattle and the ticks the ticks can be exterminated from any locality.

A campaign of education is necessary, as it is important that the public should be informed on the subject of tick eradication. This has been done, especially in localities where the work has been taken up, through the distribution of bulletins and circulars, and by short articles in the local papers. The subject is also receiving attention and tick eradication is being urged at nearly all of the Farmers' Institutes meetings in the quarantined district, and especially in the district adjacent to the non-infected area. It is surprising after all this has been done that many cattle owners say to the inspectors, "I don't believe in the tick theory. Ticks don't hurt cattle. The ticks have always been here and always will be." It is learned from experience that but little is accomplished in the matter of educating the average person of a community regarding tick eradication until the work is actually taken up there, and then one of the most effective means of education is the enforcement of the law by prosecuting violators of the regulations.

It is found that there are many cattle owners who do not read and who never attend a farmers' institute meeting. These are reached only by the inspectors. It is obvious, therefore, that inspectors should be selected who have tact in handling men and who are capable of giving intelligent instructions for the disinfection of cattle and premises, and of imparting the information necessary to convince any person of ordinary intelligence that it is to his interest to co-operate in eradicating ticks.

When it is decided to take up the work in a county or section, it should be thoroughly covered by inspectors to locate all the infected premises and instruct the owners regarding disinfection. This should not be done before the latter part of the season, preferable during the early fall, for in places where infection spectors should be selected who have tact in handling men and is slight it is likely to be overlooked during the early part of the season, necessitating reinspection later to be sure that all infection is located. All infected premises and cattle should be quarantined and kept under control until disinfection is accomplished. If, as in some sections, it might not be deemed advisable to put on the quarantine late in the season, a record of all infected premises should be kept and such premises should be quarantined the following spring. The method of disinfection best adapted to each place should be followed, and the owner should be impressed with the necessity of doing thorough work in order to accomplish disinfection in the shortest possible time and at the least expense and inconvenience to all concerned. It appears from the experience of inspectors that it is more satisfactory to require the owners to furnish the means of disinfection and to apply them than for the authorities to furnish the disinfectants and have the inspectors do the work, and it is certain that much more can be accomplished with the funds available.

Drastic measures must be instituted and must be strictly enforced to accomplish the eradication of ticks from all premises in a locality within a short time, twelve to eighteen months. This requires a large force of inspectōrs as it is necessary to make frequent inspections of all infected premises to see to the enforcement of the quarantine and to the disinfection of the cattle. This is quite difficult especially before sufficient public sentiment is created in favor of the work.

It is learned from experience that a large number of the cattle owners of a locality accomplish the eradication of ticks from their premises during the first year's work and that they

do this whether their cattle are inspected every ten days or only once in a few months. It appears, therefore, that much more could be accomplished with the available funds by doing advance work for one or two years in new territory instead of starting out with a large force of inspectors to each county to enforce the drastic measures necessary to accomplish the disinfection of all premises within a short time.

Such advance work should be done by assigning only one, or possibly two, inspectors to a county with instructions to inspect the cattle of the county and thus locate the infection, and present the subject of tick eradication to the owners, especially of infected premises, and instruct them in the best method of disinfecting their premises. While such new territory would not be covered more than a few times during the first year, much of the infection would be eradicated, and that at little cost, and public sentiment would be created in favor of the work, making it much easier to enforce disinfection later on the premises of indifferent and careless owners.

Various methods have been suggested to free cattle of ticks, as follows: By picking or brushing them off; by smearing or spraying the animals with a disinfecting solution; by dipping the ticky animals in a vat containing a solution that will kill the ticks and yet not materially injure the cattle; or by the "soiling" method.

Picking off the ticks, unless at the same time disinfectants are applied, cannot be considered a satisfactory method. Neither is it advisable in hand treating animals to apply disinfectants without first removing the large ticks. The hand treatment of cattle is quite laborious, especially when it must be repeatedly done on account of not having tick free pastures on which to put the cattle after they are disinfected. It is therefore not applicable for large herds. For large herds, or where several small herds can be collected without too great inconvenience, the plan of dipping should be followed. An emulsion of Beaumont petroleum is probably the most satisfactory disinfectant.

The "soiling" method, suggested by Curtice, which is based upon the life history of the tick, is the most satisfactory and should always be followed where the conditions are applicable. It consists in placing the cattle in a tick free inclosure for three weeks, then removing them to another tick free inclosure for three weeks more by which time the cattle should be free of ticks, for it is seldom that they remain on cattle to exceed forty days and probably never except during cold weather. By retaining the cattle not to exceed three weeks in each lot reinfection is prevented as sufficient time has not elapsed for any ticks to drop off and lay eggs and the eggs to hatch before the cattle are taken to the next tick free inclosure.

Pastures may be freed of ticks by excluding cattle for a definite period, or by cultivation. Whenever it is practicable to do so, cattle should be excluded from infected pastures from June first until late fall, or from September first until late the following spring.

Cattle and pastures may be freed of ticks at the same time by pasture rotation or by the "feed lot" method, recommended by Morgan, which, like the "soiling" method, is based upon the length of time the ticks live upon cattle and the time required for the eggs to be laid and hatched and the seed ticks to attach themselves to their hosts.

**DIFFICULTIES AND OPPOSITION.**—The difficulties to be overcome in connection with tick eradication are numerous. It is frequently very difficult to get effective co-operation and support from the local authorities. For instance, in many cases a County Board of Health fears that the work will not prove popular politically and consequently the members will refuse to take any action whatever unless it is vigorously urged by a large number of their prominent farmers and stockmen. This is true even when each member of the board is thoroughly convinced of the importance to his county of giving both his official and his moral support to the work, and of doing his part towards the enforcement of the state laws and regulations. It is also exceedingly

difficult to get local authorities to employ competent inspectors. In many instances qualification is not considered at all, which is made apparent by the appointment of cripples and old decrepit men who are wholly incapacitated for such strenuous work.

Thorough and systematic work is absolutely necessary, but it is almost impossible to make the average cattle man realize this and to get him to act accordingly. To control and eradicate ticks it is necessary to control the movement of cattle. Considerable opposition therefore results from the effort to enforce the necessary regulations in counties and localities where it is the custom to let cattle run at large. This opposition comes mostly from persons who have only one or two cows and from persons who have no cattle. The former seem to think they are being unjustly deprived of their rights by not being permitted to let their cows scatter ticks throughout the neighborhood. The latter are composed principally of shyster lawyers looking for clients, and of persons opposed to their county expending any money for such work.

Every imaginable objection has been made by owners to the disinfection of their cattle, but only two need be given consideration, namely, that there is some expense attached to the purchase of the disinfectant, and that it requires some energy to apply it to the cattle.

**RESULTS OBTAINED.**—The first aggressive measures were taken against the cattle tick when Congress appropriated \$82,000 with which to undertake experimental work in co-operation with state authorities, beginning July 1, 1906. The season was far advanced before men could be put in the field, and the work properly organized, and yet a great deal was accomplished that year. For the next fiscal year, ending June 30, 1908, \$150,000 was appropriated, and \$250,000 has been appropriated for the current fiscal year, ending June 30, 1909. The work has been pushed so far as possible with the available funds, and much has been accomplished.

Since July, 1906, 50,000 square miles, in round numbers,

have been disinfected and released from quarantine, and there are 70,000 square miles, in round numbers, under provisional quarantine from which cattle may be shipped on inspection for purposes other than immediate slaughter, but where the work has not yet been completed. The work is now well advanced in a large additional territory. Now that we have had a couple years experience, more rapid progress may be expected in the future.

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VISITOR—Your horse looks very slick and well rounded out. I suppose that comes from feeding it with punctuality.

Boy—No, sir; we don't feed him anything but oats and alfalfa hay.

SECRETARY LYMAN desires to correct the title of the paper announced in the August number of the REVIEW, to be presented at the A. V. M. A. at Chicago by Dr. Geo. H. Berns, from "Subcutaneous," to "Subcartilaginous" Abscess of the Foot, he having misread the title as given by Dr. Berns.

CAT SAVES ITS LIFE BY TRACHEOTOMY.—Tracheotomy is a delicate surgical operation. Even the best of surgeons do not think of performing it on themselves. In that they have been bested by Dr. Ginger, a pet cat in the morgue of Bellevue Hospital. Dr. Ginger cut open his throat and windpipe, removed a long and stout fishbone that was choking him to death slowly and then applied natures salve to heal the wound. The only surgical instruments he had were his own sharp claws. He is doing nicely now, and in a few days will be all right again.—*New York Times*, August 3, 1909.

CONVERSATION OF BEES.—In an article on bees and ants by Gaston Bouwer in the *Revue Hebdomadaire*, the writer contends that these insects carry on conversation among themselves, and that while this is done by means of their feelers, they are not entirely dependent upon them. "A whole colony," says Mr. Bouwer, "in an ant house or a bee-hive often responds instantaneously to a signal which may have been given without contact. It is interesting to see an ant laborer for whom a burden is too heavy go to a fellow, make a sign or give a certain touch with his feeler and then see the second insect join the first in lifting or moving the object."

## OPPORTUNITIES FOR LIVE STOCK BREEDING IN NEW JERSEY.\*

BY FREDERICK C. MINCKLER, PROFESSOR OF ANIMAL HUSBANDRY, NEW JERSEY  
EXPERIMENT STATION, RUTGERS COLLEGE, NEW BRUNSWICK, N. J.

I greatly appreciate this opportunity of meeting with so distinguished a body of live stock experts. An association of professional men based upon principle and guided by definite purposes; an association that has not only planned, but successfully executed various measures of interest and value that are of vast importance to live stock breeders of this state.

The present day veterinarian is recognized as a genuine professional expert. His dealings and relations with the live stock growers or breeders are many, and in all lines of stock raising his talents are in demand and always will be.

The real object of this state association of veterinarians is undoubtedly to promote interest in live stock husbandry, this being the purpose, the work is very closely associated with that planned and executed by the animal husbandry division of the various Experiment Stations and Colleges; and surely where there is unified action of intent and purpose the ends desired will surely be reached. I firmly believe that the veterinarians, located as they are at the leading live stock centers in the various counties, can do a great deal more than any other combination of live stock workers toward encouraging the farmers and breeders in producing more useful, as well as more marketable types of farm animals. By means of personal contact and professional advice, it is possible for the veterinarian to meet with the farmer at his own home, and to encourage as well as demonstrate to him the importance of producing only marketable individuals, and to assure him that individuality, as well as blue blood and rich breeding, is one of the secrets of live stock success. The mere

\* Read before the Twenty-fifth Anniversary Meeting of the Veterinary Medical Association of New Jersey, at Atlantic City, July 15-16, 1909.

enactment of stringent laws, of a questionable character and value, aimed to advance live stock agricultural enterprises is, in my mind, insufficient; for, after all, it is instruction, encouragement and sympathy that the farmers and breeders need to-day if real advancement is the result desired.

I maintain that the opportunities for live stock breeding in New Jersey are exceedingly numerous, and that none of the Eastern States are equally favored as regards markets and facilities for transporting farm products; and, furthermore, that the present day demand for native New Jersey live stock products greatly exceeds the supply. With such market centers as Philadelphia on one hand and New York City on the other, and in addition, the clamor for produce and meats from the vast number of popular coast cities that demand first-class and high-priced live stock products there is an outlet for a great many farm products that the New Jersey farmer does not begin to supply at the present time. The argument has been presented at various times that the Eastern States cannot compete successfully with the corn belt states and those of the far west in producing live stock for either market or breeding purposes. The reason given being (1) that our pasture season is necessarily short; that the insect pests are exceedingly destructive; that the winters are somewhat severe and (2) that the grain products necessary in the producing of salable live stock are by far too expensive and high priced for the farmer and breeder to purchase and attempt to successfully compete with the ideal natural resources that are to be found in the Middle West. For the present let me challenge the truth of this argument. I will admit that our fences are poor; that our soil has to be fed almost with a spoon before it will produce crops; that we do not have the abundant supply of palatable green pastures that is found, but scarcely appreciated in the West, and furthermore, that we do not produce the acreage of grain per farm that is to be found in the West, but in spite of these drawbacks the value per acre of farm products, including corn in this state, greatly exceeds the estimates recorded per acre for the

West, and the additional cost of production is more than met by our splendid markets. Last year according to statistics furnished by the Agricultural Departments of the various states, New Jersey ranked second in bushels of corn per acre when comparison was made with all of the states in the Union.

It has been said, and rightly so, that "any person that can plow and harrow can farm in the West, but it takes a man with brains and ingenuity to till successfully and profitably in the New Jersey soil," for these and other reasons I am thoroughly convinced that the New Jersey farmers and live stock breeders have agricultural opportunities that excel in many ways those that face the Western farmer; and that the real problem is only a matter of educating the tillers of the soil to such a degree that they will utilize their brains as well as their muscles.

To be a successful breeder of live stock is an attainment well worth while. The fundamental principles involved are many and difficult. In order to win any measure of success in producing any class of animals the breeder must first decide definitely upon what race or breed of animals he is desirous of producing, then study the market types until he is able to fix firmly in his mind an ideal type. This being done he must exercise his talents and ingenuity to the highest degree in realizing and fixing this ideal type.

The "Old Country" farmers have established a world-wide reputation as breeders. The Scottish farmer is noted for producing the Clydesdale horse and the Highland sheep; the Irish farmer is famous for producing the Irish hunter; the English farmer stands out in a class by himself as a Shorthorn breeder, while the French farmer is famous because he is largely responsible for the type of the present day Percheron horse. If you will go on further to the Island of Guernsey, you will find nothing in the cattle line but Guernsey cattle; cross the channel to the Isle of Jersey, you find nothing but the famous Jersey cow, and so on throughout all of these countries you find groups of farmers in each section famous because they have directed their

energies toward producing a single class or breed of farm animals, and not meddled indiscriminately with a half-dozen types and breeds.

In my judgment the greatest drawback to the live stock breeders in New Jersey is caused by their indecision as regards any particular class or breed of live stock; and that in their many attempts to produce a combination animal their efforts are almost failures. We have in New Jersey farmers and breeders that are especially skillful in the raising of horses, but in many cases they are not producing the most profitable type. Speed rather than utility has been the guiding principle and the residue is surely a misfit aggregation. An animal bred especially for speed and failing to possess or inherit the quality is of little value as a farm work horse, and when classified at the market centers is designated rightly as "trash."

I am thoroughly convinced that the farmer's horse is the draft horse, and that the average farmer cannot afford to produce any other type for use as a farm work horse. Two years ago I visited a great many farmers in New Jersey with the idea of obtaining information relative to the live stock being produced by the average farmer. I found that not one in fifty that were being used upon the farms were actually raised in New Jersey; that the average farmer instead of using brood mares of the draft type on his farm was keeping three or four of the misfit mongrel, weasel-bellied variety; individuals that were in many cases too light for farm work; too unsightly for market, by far too nervous for available farm help to manage and were being used on the farm simply because they were a failure from a speed or road standpoint and could not be sold at a profitable figure when placed on the market. In a few cases the farmers were producing the heavy type of draft horses, and it is needless to say that their experience from a profit standpoint was more encouraging.

It is not my intention, or desire, to say one word against the producing of the Roadster or the Thoro-bred horse, but I have

always maintained that the farmer's horse is the draft horse; that cross-breeding, or indiscriminate mating of the light horse type with the average run of farm mares is undesirable and unprofitable, and that the farmer cannot afford to spend the time, go to the expense of breaking, educating and mating the speed class of horses when he can produce farm work horses by using pure bred draft stallions on grade or pure bred draft mares that will result in fixing a type of farm horses that will always be in demand on the market where they readily sell without argument at profit sharing prices. Blemishes and unsoundness detract less from their value; they can be marketed unbroken, young and green, providing they have the necessary weight, are of a drafty conformation, and can handle heavily loaded truck wagons with ease and grace.

There is, however, a splendid outlet for fancy roadsters and coachers and fabulous prices are often paid for real top-notchers; but the farmer seldom obtains these high figures simply because he does not have the time to sufficiently educate, mate, break and handle this type of animal and it seems to me that the production of this class of horses can best be left to the special breeder or horseman who has the talent, experience and ability to breed and market them first-handed. I know of no state that offers greater inducements for this class of breeders than is found in New Jersey.

The experiences of our most successful breeders of horses, however, of any class teaches us that the breeding sire in order to be of the most good in the stud must be possessed of both individuality and breeding. The pedigreed scrub, as well as the intruding grade mongrel, has done a great deal to discourage horse breeding in this state. A great many of the stallions that are offered for service in this state would scarcely qualify as profitable selling geldings if emasculated, and it is extremely difficult for me to imagine a breeding sire in his prime that will be a noted success in the stud if he lacks those external evidences of utility and conformation such as will enable him to classify on the market as a salable market type.

Up to September 1, 1908, there were no restrictions as to type, individuality or breeding of the stallions offered for public service in this state. The worst mongrel of a beast was permitted to proceed unmolested in the breeding pen, and as a result of this cheap service a large number of colts were foaled that were nothing but misfit youngsters, animals that were unprofitable, unsightly and otherwise undesirable. The Stallion Examining and Registration Board, after holding regular examinations in each of the several counties in the state during the past year, report as follows: Of a total of 282 stallions examined 42, or 15 per cent., were found to be unsound and otherwise undesirable to recommend for breeding purposes. One hundred and nineteen of the 241 licensed were of pure breeding and registered, while 122 are licensed as grades, and in many cases these grades have scarcely a trace of known blood or desirable breeding in their veins. Of the stallions disqualified a great many of them lack unmercifully in individuality, their lineage was absolutely unknown and their services were peddled at prices ranging from \$1.50 to \$10. It would seem from these figures that the New Jersey breeders are in some cases losing sight of the value of pure bred sires, for in one county the records show seven pure bred and registered stallions and twenty-five grade sires in service. Further examination shows that the stallions now in service as regards to breeds and types are as follows: Roadster 149, Draft 49, Coach 11, Arabian 1, Morgan 4, Hackney 12, Jacks 14, Ponies 1.

That a great deal of good will result from this legislation there is no question. It will be necessary, however, to have the co-operation of all of the live stock workers in the state that are interested in elevating New Jersey horse breeding interests to the front if the greatest good is to result to the breeders themselves. The veterinarian can do a great deal toward eliminating the mongrel stallions and advising the breeders to only mate such individuals that will, in his judgment, perpetuate desirable traits.

The eleven stallions that were recently imported by the Live Stock Commission are now stationed in eleven different counties

where their services are available through farmers breeders' associations, and it is gratifying indeed to note the appreciation that the farmers in the various sections are exhibiting, and the efforts that they are exerting to secure the services of these stallions. The farmers are permitted to mate only draft mares with the heavy draft stallions, and in many cases where the farmers or members of the breeders' associations do not own mares that will pass the examination for soundness, or will classify as to type, they are purchasing brood mares for the specific purpose of using the heavy draft stallions. Over three hundred and fifty mares have been bred to date to the state stallions now in service, and it is hoped in this way to encourage the farmers to produce a more useful as well as more marketable type of farm horse.

The breeders of cattle in our state must produce only representatives of the dairy breeds, for I doubt the success of making beef profitably in a dairy section. To my knowledge there is only one herd of strictly beef cattle in the state, and so far they have only been a means of expense and experience to the owner. We are in a position to supply dairy products to the greatest milk and butter markets in the world, and in doing this the farmer must use only the best types of profitable dairy cows. There is a great difference between a dairy farmer and a cow dealer, also between the cow dealer and the cattle breeder. In many cases the cow-dealer dairymen are maintaining nothing but animal boarding barns. They are feeding far too many unprofitable cows with five and ten dollar bills, which means that they must resort to some other type of cow in order to secure funds that will repay them for the labor exerted. The cow breeders must not be compared with the cow dealer, for the cow dealer looks upon cows as mere cows, whose soul purpose is to produce a certain number of pounds of milk per year; while the breeder's aim must be improvement, and he cannot be satisfied with an average yield of milk, for his purpose is to *improve the type* as well as the function of the animal. The farmer-dairyman who neglects his cows during the summer season to care for his farm usually ne-

glects his farm to care for his cows during the balance of the year. As a result neither proposition will pay, and he concludes that farming or dairying is an unprofitable enterprise.

It is unfortunate, however, that the dairymen in New Jersey are not producing, or raising, their own cows. In a great many cases the dairymen depend entirely upon the New York state drover, or their neighbors, to supply them with dairy cows to replenish their herd, and as a result of this practice they often keep a cow a year or more before they find out definitely whether she is a profitable animal or a mere boarder. The most successful dairymen in the state are those who raise their own heifer calves, the result of mating their very best cows with a pure bred sire, whose family record is a milk record and whose individuality emphasizes his being able to perpetuate the milk making functions. The mere freshening of a dairy cow by a mongrel, or scrub, sire with nothing to recommend him but his ambition is certainly a practice that should be condemned. It has been demonstrated time and again in this state by successful dairymen that a heifer raised on the farm, the result of such mating will produce as much milk during the first year of her lactation as the average cow will produce that is purchased of the cow dealer or drover for the same amount of money that it requires to raise this heifer until she freshens for the first time. The second year she invariably does better and gradually comes to her prime and increases in value each year, while a great many of the purchased cows are mere "transient boarders." Our farmers should surely raise their own choice heifer calves; keep accurate milk records of all cows and maintain nothing in the herd that is not a profitable producer of milk or butter, and the only way to own such a dairy is to breed the animals on our farms.

Opportunity is afforded and success assured in producing any live stock product where there is a growing public demand made by a wealthy class of people for a certain commodity that can be readily produced, regularly and easily placed on a steady market where the prevailing prices insure reasonable profits. It

is evident that there is an increased and popular demand for choice, and especially early marketed mutton among the upper classes of people in our larger cities, and of late it has been impossible to meet this want in season. People in general have been educated to appreciate choice meats, and only recently the common prejudice against the so-called "flavor" of mutton has subsided.

I have visited several hundred farms in this state in an attempt to find out as far as possible the actual conditions affecting, chiefly, the live stock farmer. It was possible in this way to meet with the farmer on his own farm and talk over matters of interest relative to the particular class of stock he was raising. While comparatively few were found that could be termed large mutton producers, yet in every instance where sheep were found the owner frankly and willingly admitted that for the money invested and the food consumed his sheep and lambs yielded by far the largest profits and required the least care of any live stock on his farm. In support of these statements the chief reasons given were: First, their superior grazing qualities and ability to thrive and be content on pastures unsuitable to either cattle or horses; second, the fact that they willingly consumed all kinds of rough fodders not readily eaten by other animals without subjecting them to expensive methods of preparation; third, their superior weed-destroying habits and likings; fourth, added fertility to the soil and the equal distribution of same; fifth, that they required less labor during the busy season, less expensive winter quarters and yielded salable products always in demand at local markets at good prices. The greatest difficulties seemed to be: First, lack of proper fences; second, destruction from stray dogs; third, inability to purchase from the drover store ewes with good mouths that were sure and regular breeders; and fourth, a scarcity of experienced shearers in season. It is readily seen that the desirable features greatly outnumber the objectionable ones; and furthermore, it was found that the more successful breeders have almost solved the stray difficulties mentioned.

On the one hand, the farmers depend entirely on the local or visiting drover for his breeding ewes, which means that he buys western or southern culls varying in age and condition. Usually they are very common, if not inferior in breeding, and very often the purchaser finds that they are old and will not breed nor even fatten under the changed conditions. It is not uncommon that such ewes are mated with a scrub ram of unknown breeding, regardless of his condition or vigor. The ewes are not "flushed" nor conditioned in any way and no special feeds nor extra care or quarters furnished until weaning time when all hands are required to care for the flock. The lambs are sold as soon as possible, also the entire flock of ewes disposed of after being shorn and slightly "warmed up" by the use of a little grain and cheap roughage. The only representative of the flock that is kept over from year to year is the unsightly scrub ram, and he must make his way by working the tread power.

The other practice which is far more successful consists in selecting the choice twin-bearing ewes and keeping them in the flock during their usefulness, gradually culling them by rigid selection and reinforcing the flock each year by the additions of the choicest ewe lambs weaned from the most prolific and heaviest milking mothers. In this way it is possible to increase the number of lambs dropped, which, in turn means more profits. Instead of the mongrel ram, a pure-bred sire heads the flock and the lambs are more growthy, mature earlier and show the results of their better breeding in many ways. The ewes are regularly flushed before breeding, either by the addition of grain to the ration or by changing them over to a fresh pasture, thus insuring a more uniform settling among the ewes. The profits resulting from this method were surprising.

It is to be regretted that so few sheep raisers in this state pretend to raise or grow their breeding ewes. An offer of \$5 or possibly \$10 for a youngster that can be easily carried under their arm tempts the growers to part with them regardless of their future value. The mere buying of culled or discarded ewes

from the extreme south or west does not insure profits in lamb or mutton production; but the selecting and maintaining of the choicest twin ewe lambs from tried and known heavy milking mothers as foundation stock or breeders, is sure to result in more successful practice for the shepherd.

The New Jersey farmer is interested in that class of live stock that can be cared for at the least expense, and it must be admitted on all sides that a flock of ewes require less attention than the dairy herd, and as a machine for converting feed-stuffs into salable products the ewe ranks even above the dairy cow, being able to put firm flesh on her back, loin and leg as cheaply as the cow makes milk, and besides, offers her fleece as additional evidence of her superior feeding qualities. It was further noticed that the farms on which the flocks were kept from year to year needed far less commercial fertilizer; that there were fewer noxious and troublesome weeds, and that the physical condition of the soil was superior both as regards tilth and productiveness.

A successful shepherd must like his business and have confidence in the ability of his charges to grow and yield profits, and must know sooner or later the value of rigid selection and regular culling; also, the importance of using only pure-bred utility sires. Mere keeping of sheep without caring for them is poor business, and the party who follows this practice ought to fail, for it is doubtful if any class of farm animals require more devoted attention than is demanded by the ewe during the lambing season, especially if it is during the winter, as a few dead lambs killed by mere neglect often makes the difference between success and failure.

We have in this state ideal conditions for the raising of sheep and early lambs. The pastures for the most part are high and dry, thus free from parasites often troublesome in low marshy districts. There is an abundance of hilly grass land, too rough and stony to cultivate, that will grow luxuriant grass and forage

for the flock while their browsing tendencies increase their value as animals to have about the farm.

The whole question of opportunities or profits in the live stock breeding operations in this state rests with the individual farmer himself. We have the necessary markets, splendid grazing pastures, and can produce any variety of feed and roughage necessary or desirable for their maintenance. Our depleted farms will welcome the added fertility that the live stock will furnish and the fertilizer proposition is a very important one for the New Jersey farmer to consider. If our farmers have a liking for live stock and will carefully select, properly feed and intelligently breed the choicest types of any of the various breeds that thrive in this state, there is no doubt but that the Garden State of New Jersey offers opportunities for the breeder of either horses, cattle, sheep or swine.

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DR. H. D. RODMAN, of Kentucky, recently paid \$2,525.00 at public auction for the imported Jersey cow Oxford's Fontaine 224580. She is 7 years old.

Oxford Ixia, of St. Saviour 213909, also 7 years old, went to A. M. Bowman, of Virginia, at \$2,225.00.—*Horn and Hoof*, July, 1909.

A NEW use for the bicycle pump has been discovered by a lad near O'Brien, Wash. He inflated the udders of four dry cows, and sold them to an unsuspecting dairyman as fresh ones.

It does not speak well for the dairy knowledge of the buyer to be duped by such an easily detected swindle. A casual examination would have detected the presence of air in the cows' bags.—*Horn and Hoof*, June, 1909.

MR. BILLINGS RIDES IN RUSSIA.—A dispatch from Moscow says that the trotting races there one Sunday were given additional importance by an exhibition of Mr. G. K. Billings' trotters. Lou Dillon, driven by her trainer, made a splendid showing, while Terle, ridden by Mr. Billings, gave a performance which greatly interested Russian sportsmen. Trotting under saddle is unusual in Russia. The ladies among the spectators threw flowers at the horses. The trotting society gave a banquet in honor of Mr. Billings and presented him with a loving cup.—*The Rider and Driver*, July 24, 1909.

Indexed.

## TUBERCULOSIS AND ITS RELATION TO THE PRODUCTION OF SANITARY MILK.\*

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To be honestly called sanitary, milk must be free from disease-producing bacteria, as well as free from the fermentative and putrefactive germs and dirt. Unfortunately, however, the term has been loosely used and has lost its definite meaning. Milk produced with more than ordinary care to keep it clean, with little or no regard to the health of the cattle, is sold under the name of sanitary milk and, in some instances, ordinary market milk is sold under the same designation. Sanitary milk, properly so-called, however, is milk that does not contain any of the disease-producing bacteria and that is comparatively free from the fermentative and putrefactive bacteria and dirt. The tubercle bacillus being one of the disease-producing organisms, the first point to be considered in discussing the relation of tuberculosis to the production of sanitary milk is whether or not tubercle bacilli may pass from the body of a cow afflicted with tuberculosis into the milk.

In the beginning, the tubercle bacilli in the body of a diseased animal are to be found only in the diseased areas in the affected organs<sup>1</sup>, surrounded or hemmed in by a collection of small bodies known as cells, which have apparently collected there for the purpose of shutting off or limiting the effects of the bacilli. In this stage the bacilli cannot leave the body. The cow will show no symptoms of disease externally, but will react to the tuberculin test. The diseased area gradually extends and later the tissue dies and breaks down into a soft cheesy mass. If the extension of the diseased area has involved or embraced blood vessels or the natural channels or tubes or canals common to the various organs, small particles of the cheesy substance containing tu-

\* Read before the South Carolina Live Stock Association, Feb. 4, 1909.

bacilli may enter these tubes or canals and be carried by the fluids or air currents flowing within them to other parts of the body or to the exterior of the animal.

For example, if a tuberculous area in one of the lungs extends into a small vein, particles of the broken down tissue containing tubercle bacilli may pass into the vein and be carried by the blood stream to the udder, and be deposited there, or it may pass out with the milk. In the latter event, the milk will be temporarily virulent, if it is deposited in the tissues of the udder, another area of tuberculosis is likely to develop here, which in its gradual extension may open into one of the gland cavities or milk cisterns, discharging into these cavities broken down tissue and tubercle bacilli which are subsequently drawn off with the milk.

Milk from a cow in which the udder is affected with tuberculosis nearly always contains tubercle bacilli and will usually transmit the disease to animals consuming it in the raw state. The udder in such cases may not to the casual observer be manifestly diseased. Compared with the pronounced symptoms seen in the disease of the udder commonly known as garget, the symptoms of tuberculosis of the udder are not very noticeable. Only a small area of the gland tissue need be affected with tuberculosis to insure a more or less continual introduction of tubercle bacilli into the milk, and the external signs of the presence of the diseased area may be so slight as to be detected only by careful and repeated examinations. Tuberculosis of the udder is attended with some swelling of the affected quarter, but the swelling or enlargement develops slowly and gradually. It is not hot and painful as in garget, and, moreover, the milk may not be perceptibly changed for three or four weeks after the disease begins in the udder. Cases have been observed in which no pronounced change has occurred in the milk until eight and ten weeks.<sup>3</sup> Careful and repeated examinations at frequent intervals are necessary to discover udder tuberculosis in the early stage. Later on, when the enlargement of the diseased quarter has reached its full development, and the affected quarter has

become hard and nodular, and the milk has been replaced by a yellowish or reddish watery fluid containing clumps and flakes, it is readily detected, although even then it may be confused with garget by inexperienced observers.

Usually, when the udder is tuberculous the disease exists in other organs in the body<sup>4</sup> and has sometime previously reached the stage in which clumps of diseased tissue containing tubercle bacilli enter the blood vessels or other natural channels and are carried to various parts of the body. Therefore, udder tuberculosis, in the later stages at least, is usually attended with a poor general condition. It is possible, however, for tubercle bacilli to pass through the opening in the teat up into the gland and set up the disease in the udder primarily, but this is not the usual channel of infection. In 119 cases of tuberculosis of the udder examined post-mortem by Lungwitz<sup>4</sup>, other organs were also diseased in every case.

The udder is more frequently affected with tuberculosis than is generally realized. In 1,200 tuberculous cattle examined post-mortem in Pennsylvania, nearly all of which were dairy cows, Pearson<sup>5</sup> found the udder affected with tuberculosis in 104, or 5.75 per cent. Statistics compiled by Ostertag from the records of tuberculous cattle slaughtered in the Berlin abattoir show that in cows in which tubercle bacilli have been discharged into the blood channel at one time or another during life, the udder is tuberculous in 5 to 10 per cent. of the cases.<sup>6</sup>

Milk from cows in which the udder does not show any external symptoms of disease, but which are affected with tuberculosis of other organs has been found to contain tubercle bacilli in numerous instances. The results obtained in experiments with the milk of such cows show that the milk may produce tuberculosis in experimental animals to which it is fed or into which it is injected when the udder is not apparently diseased, but there was a marked variation in the percentage of cattle found to give virulent milk in the different experiments. Ernst<sup>7</sup> tested the milk from 36 cows and found that the milk of 12, or 33 1-3 per cent. produced tuberculosis in experimental animals. The milk

of 49 cows was examined by Ostertag<sup>1</sup> and the milk of only one of the animals inoculated with this cow's milk developed the disease. The results obtained by other investigators are between these two extremes, but differ more or less widely. This disagreement in results is due to the fact that some of the experiments were made before the tuberculin test was known, to the differences in the location, extent and distribution of the disease in the cattle used in the experiments, and also to the fact that the conditions under which the experiments were conducted did not in all cases provide against the possibility of tubercle bacilli entering the milk after it was drawn from the udder, an occurrence by no means unlikely as we shall see later.

There is one point, however, on which the experimental results are in agreement and that is, that the tuberculous cows with apparently healthy udders which are most likely to excrete tubercle bacilli are those in which the disease is advanced and more or less extensive and manifested by external signs or symptoms. The records contain the results of the examination of the milk of 51 such cows and the milk from 13 of them, or 25 per cent., transmitted the disease.

Tuberculous cows in which the disease is not manifested by any external signs and in which the disease can only be detected by the tuberculin test may also excrete tubercle bacilli in their milk, but much less frequently than cows with tuberculous udders or which are in the advanced stages of the disease. In just what proportion of such cows we may expect to find the milk virulent cannot be definitely stated. Here again, the condition will depend upon the location, extent and stage of the tuberculous areas, and in these points the tuberculin test gives no information.

The tuberculous cow which can be discovered only by the tuberculin test, while not entirely unlikely to infect the milk with tubercle bacilli, is the least dangerous of the three classes of tuberculous cattle we have considered, and where, for any reason, the tuberculin test cannot be applied to an infected dairy herd, a great improvement can be made in the sanitary condition

of the milk by prompt removal of cows from the milking line which show symptoms of udder tuberculosis or any external signs of the disease, and attention to hygienic conditions and cleanliness. The objection to the tuberculin test that it discovers the disease in cattle when they are only very slightly affected and would still be useful as dairy animals for a time is, therefore, not an excuse for failure to make any improvement in the sanitary condition of the milk supplies of cities and towns.

Milk which is free from tubercle bacilli when drawn from the udder of the cow may become infected during milking or in subsequent handling. The experiments of Gaffky and Eber in Germany and of Schroeder<sup>8</sup> in this country have shown that tubercle bacilli may be present in large numbers in the manure of tuberculous cows which do not exhibit any external symptoms of the disease and in which the infection can be discovered only by the tuberculin test. This can occur even when the disease does not exist in the digestive organs. The greater portion of the sputum coughed up by the cow afflicted with tuberculosis of the lungs is swallowed and leaves the body with the manure. The bacilli contained in this material are not apparently affected by the acids of the stomach or the other digestive fluids. Tubercle bacilli fed in water to healthy cattle were found in the manure on microscopical examination and experimental animals inoculated with a small quantity of the manure died of tuberculosis. Particles of the manure may readily fall into the milk from the body surface of the cow during milking, and some of the manure which drops on the floor or is spattered on the fittings may become dry and powdered and rise in the air as dust and fall into the milk pail. If the manure contains tubercle bacilli the milk will become infected. Schroeder inoculated experimental animals with manure from four cows which showed no evidence of tuberculosis except a reaction to the tuberculin test and found that the manure of three contained virulent tubercle bacilli. He then soiled milk from healthy cows with about as much manure from these three cows as would get into it in a dairy barn of average cleanliness and injected the milk into experimental ani-

mals, with the result that most of these animals developed tuberculosis. It is not unusual to find particles of manure in market milk. Of 172 samples of milk collected in Washington, 121 contained a sediment consisting partly of cow manure.

When the uterus, or womb, is affected with tuberculosis, tubercle bacilli may pass out from this organ through the vulva and may gain access to the milk after it is drawn from the udder in the same manner as the bacilli discharged with the manure. According to the statistics of Pearson<sup>5</sup> the uterus is diseased in 5.5 per cent. of the dairy cows affected with tuberculosis, a sufficient number to render this source of infection worthy of consideration. In tuberculosis of the lungs, when the diseased tissue is dead and broken down, the mucous fluids passing out of the nasal cavities and mouth may contain tubercle bacilli. As has been stated a large part of the sputum coughed up by a cow in this condition is swallowed and passed out with the manure, but the experiments of Pearson and Ravenel<sup>5</sup> in Pennsylvania show that some of the infectious material is coughed out and some also passes out with the saliva. By attaching a specially constructed bag to the muzzle of tuberculous cows to collect the material coming from the mouth and nostrils of such animals they found that sputum and particles of diseased tissue from the lungs and bronchial tubes were projected by coughing cows, while only saliva came from cows that did not cough, and upon examining these materials they discovered that in all of them the sputum, particles of diseased tissue and saliva, contained tubercle bacilli. During the act of coughing or bellowing the fluids of the mouth and nasal chambers may be thrown out in the form of a spray of small, invisible droplets of fluid, and any sputum or particles of diseased tissue in these fluids will pass out with them. They may be deposited on the food of another animal, or they may fall on the floor or stall fittings and be licked up by another animal or become dry and pulverized and pass into the air as dust. If these fluids contain tubercle bacilli, as was the case with the animals used in the experiment, there is not only a chance of the milk produced in the barn becoming in-

fected, but also of animals contracting the disease from eating the contaminated feed or licking up the discharged materials or licking surfaces contaminated with them. The lungs are diseased in 50 to 60 per cent. of the cattle afflicted with tuberculosis. These organs are more affected than any other. Pearson and Ravenel also found that scrapings made from feed boxes used by tuberculous cattle would transmit tuberculosis when injected into experimental animals. Another experiment by the same investigators demonstrated that tubercle bacilli are not thrown off to any extent with the breath expired by tuberculous cattle. Twelve experimental animals were kept for  $2\frac{1}{2}$  to 26 hours under such conditions that the air they breathed was largely composed of the breath exhaled by tuberculous cows and none of them contracted the disease, although tubercle bacilli were found in the saliva and sputum coughed out by some of the cows. The infection of milk with the tubercle bacilli in the manure from tuberculous cows, in the discharge from the uterus, or in the saliva and the material coughed up from the lungs will be largely influenced by the structure and the lighting and ventilation of the barn, the degree of cleanliness of the barn and the cows, and the kind of milk pail used. Barns with smooth floors, walls and ceilings can be kept cleaner and with less trouble than those in which these structures are rough and uneven. Light also induces cleanliness by exposing the dirt while the sunlight admitted to well-lighted barns assists in drying the excretions and facilitates their removal. Proper ventilation removes the dust-laden atmosphere and replaces it with the cleaner air from the outside. In such a barn there will be less dust in the air, and hence fewer bacteria, than in an unclean, poorly ventilated barn.

The condition of the cows with regard to cleanliness, as well as the time at which they are cleaned, has a marked effect upon the amount of manure and other dirt in the milk. At the Illinois Experiment Station<sup>6</sup> it was determined that milk drawn from dirty, unwashed udders contained ninety times as much dirt as milk drawn from udders that had been washed, about  $1/40$  of

an ounce of dirt being in the milk from the unwashed udder. If it be true, as has been stated, that one-half of the dirt falling into milk is dissolved, this only represents half the actual quantity in the dried state. A large proportion of this material consists of particles of manure. In a test at the Storr's Experiment Station it was shown that when the udder and flanks were reasonably clean and the udder was wiped with a damp cloth before milking, the milk contained only one-tenth of the number of bacteria found in it when the wiping was omitted. Cleaning or brushing the cows immediately before milking will greatly increase the amount of dirt and the number of bacteria in the milk. The covered milk pail reduces the dirt and bacteria about one-half.

The facts which have been related show how tubercle bacilli may pass from tuberculous cows into the milk. It may now be of interest to know to what extent tubercle bacilli are found in milk as it is delivered to the consumer. I have examined the records of the examinations of samples of milk collected in fourteen cities in other countries and in two cities in the United States. The number of samples collected in foreign cities amounted to 1,271, and the percentage found to contain virulent tubercle bacilli varied in the different cities from 2.8 per cent. to 56 per cent. The two American cities included in the records are Boston and Washington. In Boston twenty-five rabbits were inoculated with samples of milk collected from city dairies and 3, or 12 per cent., developed tuberculosis. The examinations in Washington have been much more extensive. Mohler<sup>12</sup> examined 73 samples of milk and found 2, or 2.7 per cent., to contain virulent tubercle bacilli. Anderson<sup>12</sup> examined 272 samples, of which 49, or 18 per cent., killed the experimental animals with peritonitis or other acute disease before there was time for tuberculosis to develop, leaving only 223 to be tested for virulent tubercle bacilli. Of this number 15, or 6.72 per cent., produced tuberculosis in experimental animals. Milk from 104 dairies was also examined by Anderson, the milk from each dairy being examined separately. The experimental ani-

mals injected with milk from two of the dairies died with acute disease before tuberculosis could develop. The milk from eleven of the other 102 dairies was found to contain virulent tubercle bacilli. These figures should not be understood as indicating exactly the frequency of tubercle bacilli in milk. In these experiments it sometimes happens that when two animals are inoculated with the same sample of milk one develops tuberculosis and the other does not, showing that the bacilli are not evenly distributed. The virulence of infected milk is also affected by the amount of non-virulent milk with which it may be mixed. Gebhart,<sup>7</sup> for example, found that milk that would infect guinea pigs with tuberculosis whom injected undiluted, or when diluted with 20 parts of non-virulent milk, would not set up the disease when 50 parts of non-virulent milk were added to one part of the virulent milk. The results obtained by him should not be considered as final, however, as each dilution of milk was tested on only one experimental animal.

Aside from its hygienic influence in the production of milk, tuberculosis is also of great economic importance. Almost every animal that is afflicted with tuberculosis is killed by the disease sooner or later. Usually death does not occur for months or years after the animal is infected, and this characteristic of the disease, together with the peculiarity that it may exist in a herd for some time and make considerable progress before its presence is suspected, is responsible for the failure to realize its real nature in many cases. If the disease killed quickly its distinctive character would be more generally recognized and the loss it causes would be much reduced. The value of the animals it destroys is only one item of loss. In many cases, cattle are afflicted with tuberculosis a long time before they are known to be diseased and for a part of this time at least feed is necessary not only to maintain the body against the normal wear and tear, and to produce milk, but also to overcome as much as possible the additional wear and tear due to the ravages of the disease. How much additional feed may be required for the latter purpose cannot be stated, but whatever the amount it is a total loss.

In many cases where account has been taken of the amount of feed given to a cow and the milk received has been weighed it has been found that the cow was not paying for its keep, much less making a profit for the owner. In localities where what are known as cow testing associations are in operation, entire herds have been found where the value of milk received was not sufficient to pay for the feed consumed. While in many such cases the character of the cows, the kind of feed given, or the method of milking or caring for the cows has suggested a reason for the result, the probability of the presence of tuberculosis and its influence upon the productiveness of the cows must also be given consideration. A very common complaint from owners of tuberculous cows is: "The yield of milk does not correspond to the cost of keep," or "They eat well, but the feed does not seem to do them any good and they are falling off in milk." These statements are quotations from letters recently received from two owners of dairy herds. Decrease of the milk flow, in spite of generous feeding, is often one of the first effects of the disease noticed by the owner.

When a herd is extensively infected with tuberculosis there are nearly always some cows that stop breeding and become "chronic bullers." These not only cause considerable annoyance, but are also fed at a loss.

Cows in which the disease is advanced may abort their calves, or if the calves are carried the full term and born alive they are likely to be weak and unprofitable. Tuberculosis in a herd also limits the market for young stock. Tuberculosis in cattle is a disease that is widespread, and it should receive the careful consideration of every dairyman and cattle owner. It is not a subject of interest only to the individual owners of infected herds. Every tuberculous cow that is sold or is sent to market influences in a measure the general market value of cattle. If a dairyman buying fresh cows finds that a certain number are likely to develop the disease, he must take these losses into consideration in fixing the purchase price, or by subject to the tuberculin test, or he cannot continue in business. If the packer has a certain per-

centage of animals condemned on account of disease the loss sustained must be taken off the market price of the live animals or attached to the selling price of the meat and other products.

The cattle in the older countries of Europe are more extensively diseased than in the United States. According to Bang<sup>1</sup> one-half to three-fourths of the herds in Denmark are infected. McFadyean<sup>9</sup> estimates that 20 per cent. of the cattle in England are tuberculous, an opinion which is confirmed by the fact that 33 per cent. of the cattle examined in Great Britain in one year for importation to the United States were found to be affected with the disease. In Germany tuberculosis is quite as prevalent. While the disease is less extensive in this country, it appears to be gradually increasing. This is shown by the records of the post-mortem examinations made by the veterinary inspectors of the U. S. Bureau of Animal Industry of animals slaughtered in the abattoirs under government inspection. While the number of cattle examined in 1908<sup>10</sup> was less than double the number examined in 1908<sup>11</sup>, nearly six times as many carcasses were condemned for tuberculosis in 1908 as in 1900. The increase of tuberculosis in hogs is even greater. The increase in the number of hogs examined in 1908 over 1900 was a trifle in excess of one-third, while the number of carcasses condemned on account of tuberculosis was seventeen times greater in 1908 than in 1900. These figures do not take into account those animals in which the disease was so localized or limited that only a part was condemned; if these were included even greater increases would be shown.

A very large number of these cattle and hogs came from the Central Western states; another portion from the West and Southwest, and only a small number from east and south of the Ohio river. In the Central Western states it is a common practice to keep hogs with the cattle in order that the hogs may eat the grain which passes through the cattle undigested. Much skim milk is also fed to hogs. Therefore, for this section the amount of tuberculosis infection in hogs is an index to the degree of infection in cattle. Ten years ago men prominent in

agricultural lines were denouncing the tuberculin test and ridiculing the idea that tuberculosis could become prevalent in this section. It would be interesting to know to just what extent these teachings are responsible for the present conditions.

Much was made of the fact in those days that the cattle lived more in the open air in the Central West than they did in the more eastern and more thickly settled sections of the country and were, therefore, in no danger from tuberculosis. The same statement is often made with regard to tuberculosis in cattle in South Carolina and in the South in general. There is no very extensive data on record relating to tuberculosis in cattle in South Carolina. The only records available are those on file in the State Veterinarian's office at Clemson College, and these only cover 168 cattle in five dairy herds which have been tested with tuberculin since 1906. Of these cattle only 4, or 2.3 per cent., were found to be diseased. These figures are much too meagre, however, to be accepted as an index to the extent of tuberculosis among the 140,000 dairy cattle and the 370,000 other cattle in this state. But it is important to note that previous to the tests there was no reason to believe that any of the herds tested with tuberculin were infected with the disease. The herds were tested merely to obtain accurate information regarding their condition. There is no reason to believe, however, that tuberculosis exists to any great degree among the cattle in this state. Here, the principal danger seems to be from without. The important question is not how much tuberculosis exists in the state, but to what degree does the disease exist in the herds in other states from which cattle may be imported.

Following the lead of Massachusetts, New Hampshire, Vermont and Pennsylvania, a number of states have endeavored to prevent the introduction of cattle afflicted with tuberculosis from other states by passing laws requiring all cattle imported for dairy or breeding purposes to pass an inspection and tuberculin test. Thirteen states now have such laws, and it is only reasonable to suppose that cattle which cannot be shipped into these states are sent into those states which do not have such a law. The

law in Pennsylvania, which I mention because I am most familiar with it, has been in operation since 1889. A few recent occurrences that I can recall to mind will show how such a law operates to keep out tuberculous animals. In one lot of 25 cattle, which were to be shipped into Pennsylvania from another state, 12 reacted to the tuberculin test. In another lot of 5 all five reacted. Seven out of 26 reacted in a third lot, and ten out of 21 in a fourth lot. None of these cattle showed any external signs of the disease.

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A USEFUL method of testing a horse's working capacity has apparently been discovered by a German scientist, Dr. K. L. von Lutzow, as a result of numerous experiments. Using draft horses weighing 1,800 to 1,900 pounds he found the great variation in their ability to retain their weight at hard, steady work was closely associated with the behavior of the heart. After a day's work the pulse of a horse which lost weight rapidly required sometimes as much as  $3\frac{1}{2}$  hours to become normal. In horses that either held their weight well or gained during periods of hard work the quickened pulse soon decreased to normal rapidity when the day's work was done, requiring in some cases no more than thirty minutes to subside. So far his tests bear out the principle that in a horse of good staying powers the heart quickly reduces the rapidity of its beats when the animal rests after several hours of hard work. It is a test which horsemen can easily apply. A little experimentation with it will furnish some useful information regarding its accuracy and the possibilities of its application in detecting counterfeits. The theory has a logical basis for its support as well as the backing of experiments by a careful German scientist.—(*Breeder's Gazette*, July 28, 1909.)

Indexed.

## SERUM IMMUNIZATION AS A PREVENTIVE FOR HOG CHOLERA.

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(VETERINARY DEPARTMENT).

The rapid advances made in the study of immunity during the past few years renders it essential that we consider a few of the basic principles upon which the serum immunization against hog cholera rests before considering the serum treatment proper.

Immunity is that condition in which an individual or a species of animals exhibit unusual or complete resistance to an infection for which other individuals or species show a greater or less degree of susceptibility. Consequently it is only in connection with infectious diseases that we consider immunity. Immunity may be of various types. For example, we have acquired immunity, when an attack of a certain infectious disease brings about a change which renders the individual immune to further attacks of the same disease. We have natural immunity, when individuals or species possess an inherent quality which prevents them from contracting the disease to which other individuals or species are susceptible. This immunity is not brought about by any condition which occurs subsequent to birth. We have anti-bacterial rather than antitoxic immunity in such diseases where the poisons are not secreted in a soluble or diffusible form by the living cell. In these we have what are known as endo-toxins. However, such diseases may be accompanied by pronounced toxic symptoms.

In other diseases of which diphtheria and tetanus are examples, the serum neutralizes the toxins, but does not necessarily injure the organism itself. The distinction between anti-bacterial and anti-toxic immunity is an important one.

Active immunity, which is also usually of a more or less lasting nature, results from infection or intoxication and depends

HOG

upon a specific reaction on the part of the tissue cells in response to the chemical injury produced by the bacteria or their toxins.

When an immune serum is injected a passive immunity is obtained, because it depends upon the introduction of immune bodies rather than their production through an active process on the part of the one injected.

**ANTITOXIC IMMUNITY.**—The combination of toxin and antitoxin is direct and follows the laws of chemical combination. The toxin is composed of two groups, a haptophore or combining group, the other is the toxophore or poisoning group. The haptophore or combining group is quite stable, while the toxophore group is destroyed at 55 degrees C. or decomposes on standing. This, however, does not prevent the haptophore group from uniting with a suitable antitoxin. It is only when the haptophore group happens to fit to one of the side chains or receptors of the body cell that the toxin can act. If this combination is effected, the toxophore group acts on the cell and injures it. As a result of this injury the receptors are given off in excess and thrust into the circulation. These free receptors constitute the antitoxin. If a toxin now enters the body similar to the one which leads to the production of the antitoxin the haptophore group of the toxin will be satisfied by the antitoxin and prevent the poison from damaging the cells.

Large doses of toxin are administered in the production of antitoxic serum, the object being the union of the toxin with the receptors of many cells. The antitoxins are much more stable than the toxins.

**BACTERICIDAL IMMUNITY.**—In this, two constituents of the specific serum are concerned in its destructive powers instead of one as in antitoxic immunity. One of these is able to withstand heating to 55 degrees C. and is contained only in the specific serum. The other is destroyed by heating to 55 degrees C. and is contained in the serum of normal untreated animals as well as in the specific bactericidal serum. For this reason if bactericidal serum is rendered inactive by being warmed to 55 degrees C. it may be reactivated by adding serum from a normal untreated

animal. The less stable constituent of bactericidal serum, which is also found in normal serum, is known as Alexin or complement. The other, which is stable and found only in the specific serum is termed substance sensibilisatrice, immune body or amboceptor. The destruction of bacteria, therefore, requires the substance sensibilisatrice of the specific serum and the Alexin which exists in normal as well as specific serum. The ferment-like action or digestive powers of the Alexin or complement cannot injure the bacterial cell until the cell has been rendered susceptible to the action of the Alexin or complement by the substance sensibilisatrice of amboceptor. The Alexin or complement which possesses the digestive powers decomposes on warming or spontaneously on standing and does not exist in immune serum if this is not perfectly fresh. This explains why bacteria are not dissolved by bactericidal serum after it has stood for some time; also why it may be reactivated by adding a little fresh normal serum or by injecting into the living animal. It also explains why a serum may be inactive in test tube experiments and intensely active in the living body in which it finds the Alexin or complement necessary for its action.

The immune body, or amboceptor, possesses two binding groups; one which attaches to the bacterial cell, and the other to the Alexin of the normal serum, and it is only through the immune body that the Alexin can effect the bacterial cell. From the preceding it follows that the stable, immune body, substance sensibilisatrice, or amboceptor, is the exclusive factor in the specific action of bactericidal serum. It possesses a combining group which is specific for the cells with which the animal has been treated. In other words the widely distributed complement found in the normal serum is concentrated on the bacterial cell by the immune body.

Specific bactericidal sera and normal sera differ in that the specific sera contain immune bodies which are specific for certain bacterial cells and through the medium of which the Alexins or complements in all normal sera are enabled to cause their solution. It is necessary, therefore, that the haptophore group of

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the immune body fit exactly to certain receptors or side chains of the bacterial cell.

A great variety of inter-bodies are found in small amounts in normal serum and in addition a considerable amount of complements. In immune serum on the other hand, an enormous increase in the amount of a specific inter-body occurs, which constitutes the immune bodies, or amboceptors. In bactericidal immune serum, this specific increase is sometimes as much as 100,000 of that of normal serum. The complement is not increased by the immunizing process.

Only one of the necessary constituents, therefore, is supplied by the injection of an immune serum, and that is the immune body. The other necessary body or complement is found in the organism to be treated.

**PRACTICAL VALUE OF INJECTIONS OF BACTERICIDAL SERA.**  
—Practically the use of specific anti-bacterial sera has been tried on a large scale in man, and to a considerable extent in animals. Very virulent bacteria can be injected into susceptible animals without danger, if small doses of their respective anti-serums are given before the bacteria have increased to any great extent in the body. If given later, the sera are ineffective. Bactericidal sera, therefore, enable us to immunize against an infection and in some cases stop one just commencing, but we cannot cure an infection which is already fully developed. Observations in practice indicate that bactericidal sera have not given evidence of great value in already developed disease.

**APPLICATION OF THESE PRINCIPLES TO SERUM TREATMENT OF HOG CHOLERA.**—We cannot expect to get favorable results from the use of a serum or vaccine in diseases, a natural attack of which does not render the animal immune. Inasmuch as hogs which have passed through an outbreak of hog cholera are immune, it is reasonable to suppose that a serum could be produced which would render the animal passively immune, and such, in fact has been found to be the case. When a hog recovers from an attack of hog cholera we speak of naturally acquired active immunity. When treated with serum, a hog ac-

quires artificial passive immunity. When treated with the serum simultaneous method a hog has artificially acquired active immunity. Naturally acquired immunity is always active inasmuch as we have seen that the cells of the body must take an active part in overcoming an infection. Whether immunity from hog cholera is antitoxic or anti-bacterial we are not absolutely certain. It is suspected, however, that it is anti-bacterial. If this be true we would expect the following, which is in harmony with practical experience. When a hog recovers from infection with the hog cholera virus, he has developed during his recovery a large number of amboceptors or immune bodies. If he is now treated with a large quantity of virulent blood the cells of the body would be stimulated to increased production of these bodies, which would consequently be found in large quantities in the blood. The complement would not be increased. If the serum is now removed from the animal the complements soon decompose on account of their unstable character, but the immune bodies, being quite stable, would remain in the serum for a long time unless subjected to very high temperatures or other deleterious influences. If this serum is now injected into a hog which has had no infection, the immune bodies would, in the processes of metabolism, be eliminated within a few weeks or months. If the hog became infected at the time by artificial inoculation or natural infection, the immune bodies would unite with the receptors of the virus and through the medium of these immune bodies the Alexin or complement, which is found in all normal sera, would destroy the virus. If the hog had become infected some time previous and the virus was present in considerable quantities the amboceptors or immune bodies, which would be contained in an ordinary practical dose of serum would be insufficient to prepare all of the virus for the action of the complements. Consequently, the injection of ordinary doses of the serum would have very little, if any, appreciable effect upon the course of the disease.

If the serum is of low potency, that is, contains but few immune bodies and the blood is very virulent in the simultaneous

method, we would expect unfavorable results, which should be avoided. From the above, we may conclude that the serum alone is indicated in outbreaks and in these only the apparently healthy hogs should be treated, because hogs which have begun to show symptoms of hog cholera have the virus in their bodies in such large quantities that the immune serum would be practically useless. The infection, which would be obtained in outbreaks would be sufficient to produce active immunity even if the animal had been treated with the immune serum. The serum simultaneous method, it is readily apparent, would not be indicated where the opportunities for infection in the natural way were sufficient. Until we can determine with a considerable degree of accuracy the virulence of the blood the immunizing properties of the serum and the resistance of the animal, it does not appear to the writer that the serum simultaneous method should be recommended for general use by inexperienced persons.

**CONCLUSION.**—Immune hogs treated with large quantities of virulent blood produce a serum which will render susceptible hogs either actively or passively immune, depending upon whether it is accompanied by infection.

The serum should be used before the animal shows any indication of disease; that is, before the virus has increased to any considerable quantity in the body.

The serum treatment should be accompanied by infection in order to produce an active immunity. Consequently the chief indication for the use of the serum alone is on apparently well animals in infected herds. The serum simultaneous method is indicated in healthy herds in danger.

It is useless to attempt treatment of animals already showing symptoms of the disease unless very large quantities of serum are used.

That inasmuch as immunity is always specific, only the virus which is now known to be the actual cause of hog cholera can be used in the production of a successful immune serum for hog cholera.

## ECHINACEA ANGUSTIFOLIA IN THE TREATMENT OF INFLUENZA.

By G. W. BROWNING, V. S., MONTGOMERY, ALA.

I have been using echinacea for the past twelve years, in the treatment of Influenza, and the results in all cases have been satisfactory, and in some almost bordering on the miraculous.

Physiological action as given in Dr. Finley Ellingwood's *Materia Medica and Therapeutics* are, when a half teaspoonful of the tincture is taken into the mouth, a pungent warmth is at once experienced which increases to a tingling, and remains for half an hour after the agent is ejected. It is similar to that of aconite, but not so much solely of the nerve-end organs. The sensation is partly of nerve tingling, and more from an apparent mild nerve irritant effect. It much more resembles the action of xanthoxylum. If a small quantity be swallowed undiluted, it produces an apparent constriction of the throat, sensation of irritation and strangulation, much greater in some patients than in others and always disagreeable. The sensation persists for some minutes, notwithstanding the throat is gargled, water is drunk, and the agent is entirely removed. It promotes the flow of saliva in an active manner, the warmth and tingling extend down the esophagus to the stomach, but no further unpleasant influence is observed. In a short time diaphoresis is observed, and the continuation of the remedy stimulates the kidneys to increased action. All of the glandular organs seem to feel the stimulating influence, and their functional activity is increased. The stomach is improved in its function, the appetite increases, the food is more perfectly digested, the bowels operate better, and absorption, assimilation, and general nutrition are materially improved. It encourages secretion and excretion, preventing further auto-intoxication, and quickly correcting the influence in the system of any that has occurred. It stimulates retrograde

metabolism, or tissue waste more markedly than any other single remedy known. It influences the entire lymphatic system, and the condition of the blood suggests that the patient has been taking stimulants, liver and iron remedies in abundance. Sallow, pallid, and dingy conditions of the skin of the face quickly disappear, and the rosy hue of health is apparent. Anemic conditions improve, with increased nerve tone. There are but few subjective symptoms from large doses of this agent. It is apparently non-toxic, and to any unpleasant extent non-irritant. The agent certainly has a most marked effect upon the nervous system, but its specific influence upon the central organs has not yet been determined.

**SPECIFIC SYMPTOMATOLOGY.**—It is the remedy for *blood poisoning*, if there is one in the *Materia Medica*. Its field covers acute autoinfection, slow progressive blood taint, faults of the blood from imperfect elimination of all possible character, and from the development of diseased germs within the blood. It acts equally well, whether the profound influence is exerted upon the nervous system, as in puerperal sepsis, and uræmia, whether there is prostration and exhaustion, as in pernicious malarial and septic fevers, or whether its influence is shown by anaemia, glandular ulceration or skin disease.

It is especially indicated where there is a tendency to gangrenous states, and sloughing of the soft tissues, in all cases where there are sepsis and zymosis.

I have experimented with it to determine its immediate influence upon the fever caused by continued absorption of septic material such as *catarrhal fever*, *puerperal fever*, etc., which show that its destructive influence upon the pernicious germs begins at once.

I have used it in several cases where special sedatives were not given, the temperature has declined from one-half to two degrees within a few hours after its use was begun, and has not increased until the agent was discontinued. It has then slowly increased towards the previous high point until the remedy was again given, when a decline was soon apparent. It does not

produce abrupt drops in temperature as often follows the curetting of a septic womb, or as the removal of a quantity of septic material causes, but it effects an almost immediate stop to germ development, and a steady restoration from its pernicious influence.

In the treatment of influenza, or so-called shipping fever in horses, when given in the initial stage the fever has disappeared in three days, and five days is the extreme limit. While my greatest experience with echinacea, has been in the treatment of influenza in horses, have used it with good results in the treatment of azaturia, septic metritis, and uræmia. It is a most important remedy in *uraemic poisoning*, and I believe in time will supersede all other single remedies. However it will be necessary to use a preparation that is pure and of a standard strength.

I have always been partial to Lloyd Bro.'s Specific Tincture, find it a very reliable preparation free from sediment and always can be depended upon, but of late years have been using Parke Davis fluid extract and find it perfectly reliable. In the treatment of influenza I begin as soon as I am sure of my diagnosis, by giving from two to four drachms of fl. ex. echinacea every two hours for 24 hours, then discontinue the echinacea, for six hours; if the temperature begins to go up again at the end of six hours, I then begin and give the echinacea every two hours for 18 hours, in most cases the temperature will not rise again after 48 hours. In case it does I repeat the remedy and rarely ever fail to reduce the temperature to 102 Fahrenheit by the third day to go up no more. In some very obstinate cases I have given 4 drachm doses every hour for 24 consecutive hours; as the remedy is non-toxic it can be pushed till you get the full physiological effects without any danger to the patient. The only thing, when used in very large doses, there will be retching of the throat muscles something similar to aconite, but this passes off in a few seconds. This is about all the medicine that I give in a case of influenza, unless there is yellowness of the visible mucous membranes showing the liver to be affected, then I give at the outset a capsule of resin podophyllin twenty grains, lep-

tandrin four drams, powdered ginger one dram, to be repeated again in 24 hours if bowels fail to act; if complicated with pneumonia and left with a cough after the fever is reduced, I give a powder every 12 hours composed of powdered ginger, capsicum, lobelia, symplicorus foetidus, and asclepias tuberosa, but I find when you cut the fever short without reducing the vitality, as can be done with the diligent use of echinacea, there is generally not much need of tonics, as there is no anorexia, and the digestive function of the stomach is improved by the use of the echinacea, the animal begins to improve and gain strength from the time the fever is gone.

I do not claim this agent to be an entire specific in all cases of influenza, such as have been whipped and driven after the disease has come on, but if not too badly jaded before the treatment is begun, I do feel confident that 95 per cent. can be cured by the vigorous use of echinacea; as I have repeatedly brought the temperature down from  $104\frac{1}{2}$  to 102 in 24 hours, and by keeping up the use of the drug for from three to five days, according to the severity of the case, the temperature has remained at 102 or below, and the animal making a good recovery, with no after treatment only the use of a good laxative diet, and the animal being able to go to work in the course of ten to fourteen days; when under the old line of treatment, with aconite, belladonna, quinine, carbonate of ammonia, and the coal tar preparations have had them run on in an emaciated condition, for from four to eight weeks before being able to return to work, and then probably result in roaring, thick wind, or purpura hemorrhagica; and either carrying the horse off, or his being of no value for life. I have never had a case that was treated with echinacea, in which there was any sequelæ such as thick wind, purpura-hemorrhagica, etc., and for my part as long as echinacea continues to give such results in the future as it has in the past, I expect to continue to use it in all zymotic diseases or diseases due to auto-infection.

## TETANUS.\*

By I. L. SALLEY, D. V. S., SKOHEGAN, ME.

Mr President and members of this association: When I agreed to read a paper at this meeting, I was hardly aware of the time and work it would require in order to present something worth your time and attention.

It was also somewhat difficult for me to select a subject; not because of lack of material, for we all know that there are plenty of diseases in veterinary medicine, but to select something which I could treat with sufficient brevity and at the same time bring up something of interest to you.

I finally decided to write upon Tetanus, partly because I have never seen a paper upon this subject, and partly because of the experience I have had with this disease. I shall not attempt to go much into details, for that would require too long a paper, but I will try and give you some of the most important points and something of the advancement in the pathology and treatment of this most important disease.

**HISTORY.**—Tetanus is one of the oldest as well as one of the most painful and fatal diseases we have in the domestic animals. All kinds of theories have been advanced for the cause of this disease, such as cold and dampness, inclosure of a nerve in the cicatrix, worms in the stomach, uterine irritation following abortion, and by some it was thought to be a blood disease; but in 1858 Dr. Greswell said, "There is no evidence that it is ever contagious."

**ETIOLOGY AND PATHOLOGY.**—Recent experiments have satisfactorily proven that tetanus is a germ disease and produced by the inoculation of this germ within the tissues. Nicolaier was the first to discover and describe the germ. He says it appears usually in the form of a long bacillus, one extremity of which

\*Read before the Maine Veterinary Medical Association, January 13, 1909.

bears a colored swelling and later a brilliant spore, of a diameter which is two to four times larger than the body of the bacillus itself.

Bonome was the first to find the specific bacillus in tetanic animals. The transmissibility of tetanus to animals of different species and to man was demonstrated experimentally in 1884 by Carle and Rottone. Attempts at inoculation made previously, especially in the horse, by transfusion of blood, had been unsuccessful.

Carle and Rottone have transmitted tetanus to rabbits by inoculating pus from a tetanic human subject. A short time afterwards, Giordano communicated it to the guinea pig and the mouse by injecting pus taken from wounds made by the castration of horses and which were affected by tetanus.

This author has also established the fact that the blood of tetanic animals is not virulent, and hence the negative results by transfusion.

Beumer has recognized that inoculation is only successful upon fresh wounds. The tetanic bacillus possesses an extreme resistance, but must be kept from oxygen in order to thrive.

Within the last few years, researches upon tetanus have given important results. Toledo and Veillon have succeeded in obtaining in a pure state the bacillus of Nicolaier by cultivating in a suitable media, viz., Gelatine Blood-serum, etc., and protecting from oxygen, they have seen the development of small mobile bacilli which are elongated in undulated filaments, and after the tenth day show a sporulated form which is drum-stick or bell-hammer shaped.

At this stage they possess the most resistance. They are not destroyed by a temperature of 90° C. for fifteen minutes, by a five per cent. phenicated solution for ten hours or a one per cent. sublimate solution for three hours.

When inoculated the bacilli remain in the tissue surrounding the wound. Vaillard and Vincent have recognized that pure cultures of tetanic bacilli act only by the toxine which they contain.

The microbe not only does not become multiplied in the tissues

where it is deposited, but it disappears rapidly and does not produce disease if the toxine is removed before inoculating. It can only prove effective when acting with certain chemical substances, viz., lactic acid, or with certain common microbes (hygienic microbes).

If inoculated alone it is rapidly encysted and destroyed by phagocytes, but if it is associated with other micro-organisms, the latter attract the phagocytes and allow the tetanus bacilli to develop.

Under its influence organic albumins undergo a series of transformations and generate ptomaines which possess properties similar to those of strychnine.

Of these alkaloids, Brieger has isolated tetanine, tetanotoxine, spasmotoxine and another which he has called taxalbumine—its composition appears to be that of albuminoid matters.

Vaillard and Vincent look upon it as a diastosis which is clearly comparable to toxine which is secreted by a diphtheric bacillus and the effects of which are limited to the neuro-muscular system.

**ANIMALS AFFECTED.**—Although all domestic animals may have tetanus and although it used to be quite common, at the present time with the asepsis practiced in surgery and upon wounds, tetanus is rarely seen.

**FORMS OF TETANUS.**—Three forms of tetanus have generally been recognized: the traumatic, rheumatismal, and toxic. It is safe to say with our present knowledge of tetanus that the first-named is the only true one, and the two latter are only myths and should be forgotten.

**SYMPOTMS OF TETANUS IN GENERAL.**—The symptoms are that which would follow tonic spasms of any and sometimes all of the different sets of voluntary muscles of the entire system: we have the arched tail, closing of the jaws, or trismus and stiffness of the head, neck, shoulders, limbs, etc.

But a symptom that is almost always present is the contraction of the great posterior muscles of the eye, causing retraction of this organ within the orbit and a protrusion of the mem-

brana nictitans upon the eyeballs when the nose is elevated; this is a symptom which I have always seen in all cases in the first stages, and never in any other disease.

TREATMENT.—Various treatments have been used, mostly in the form of narcotics, such as chloral, morphine, inhalations of chloroform, rectal injections of ether, belladonna, nicotine, aconite, calabar bean, etc. I believe all these remedies are useless in themselves alone, and simply tend to ease pain, and perhaps prolong life a little, with no chance of a cure. The only treatment for lockjaw that I have any faith in is the use of the antitetanic serum or the tetanus anti-toxines.

During the last twelve years I have treated with anti-toxine fifteen cases and have saved ten, five having died with the best of treatment I could give them. I will not go into detail with all these cases, but will describe two or three of the more important ones.

Case No. 1.—Sorrel horse 12 years old, weight 1,200 pounds. Calked while harrowing some two weeks previous. When I was called the symptoms of tetanus were well advanced and trismus was complete.. I began the anti-toxine treatment and after using six doses, it recovered sufficiently to feed grass from the ground. At this time I got out of anti-toxine and before I could obtain it from New York the animal was dead. Had I sufficient anti-toxine I have no doubt this would have been one of the cases of recovery.

Case No. 2.—Gray mare, age 8, weight 1,100 pounds. Some three weeks previous had been cut in foot while threshing, and had been treated by a quack; when called a well-developed case of tetanus was found. I used the anti-toxin and after nearly complete recovery I removed quite a piece of wood from the foot.

Several other cases could be related, but would add nothing of especial value to the above reports.

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DR. F. A. NIEF, of Seattle, has been appointed official veterinarian for the Live Stock Show to be held in connection with the A.-Y.-P. Exposition.

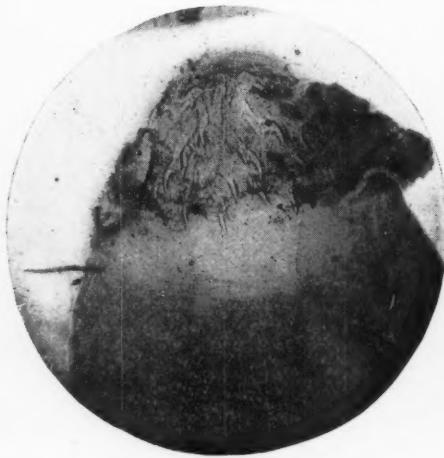
## REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

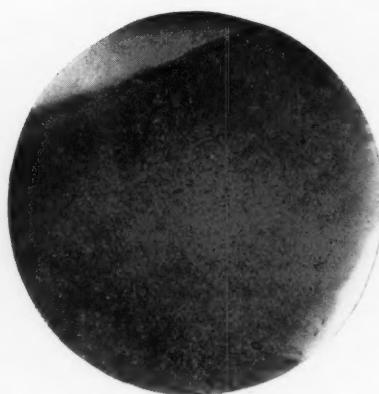
### ECHINORHYNCHUS CANIS.

By J. W. PARKER, D. V. S., El Paso, Texas.

Supplementing the article by Dr. B. F. Kaupp, in May issue of the VETERINARY REVIEW, in which he gives a technical description of a parasite sent him by me, in 1902, and suggests the name *Echinorhynchus canis*: Specimens were also sent to the U. S. Department of Agriculture, and to others, none of whom



Echinorhynchus Canis.  
4 M. M. Obj.—1' Ocular.  
Head of female—retracted.

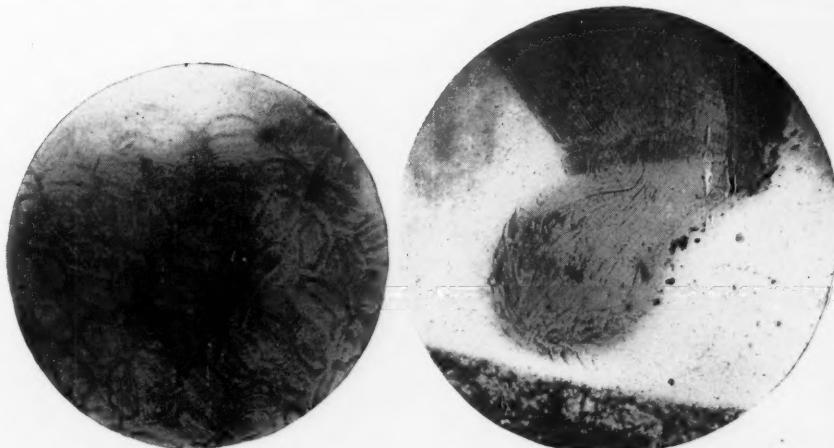


Neck (retracted) of female.  
Echinorhynchus Canis.  
4 M. M. Obj.—2" Ocular.

were able to identify the parasite with any classified species. Aside from being apparently an unclassified species, the chief interest centers in the symptoms and pathology of the case.

In September, 1902, a pointer dog, about nine or ten months old, ran through the streets of San Antonio, Texas, biting other dogs and two children, who were bitten on the hand, face, and

groin. (The wounds of the children were treated by physicians, with carbolic acid, within an hour, neither developing rabies. No rabies among animals was reported in the newspapers within the two months following.) The dog was tied up by a policeman, and I was called. The symptoms were strongly indicative of rabies. Great exhaustion, altered voice, dropping of jaw, dribbling of saliva, tucked up abdomen, frenzy and vicious aggressiveness, muscular inco-ordination. The dog died after twenty-four hours, with continued frenzy and progressing par-



Eggs in body of female.  
*Echinorhynchus Canis.*

Shells are shriveled from dehydration.  
4 M. M. Obj.-1" Ocular.

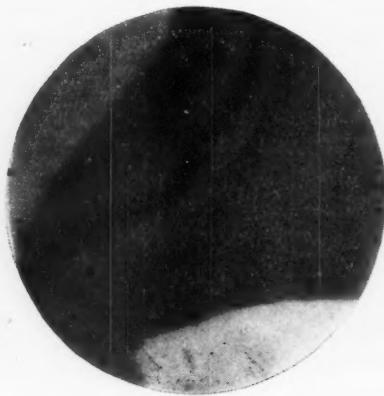
Head of male, protracted.  
*Echinorhynchus Canis.*  
4 M. M. Obj.-1" Ocular.  
(Brownie Kodak).

alysis, unable to eat or drink, during which time he tore up a rug and a burlap sack given him for bedding.

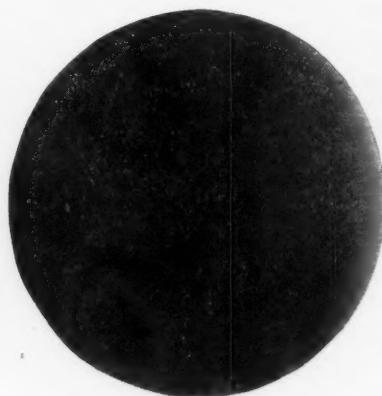
Numerous ulcerations, as from abrasions three or four days old, were found on the buccal and gingival membranes and tongue; some congestion of fauces; acute pulmonary congestion the immediate cause of death; brain normal microscopically; stomach empty except a little grass and dirt; other organs apparently normal except that about three hundred small worms (*Echinorhynchus canis*) were found in the jejunum and ileum, chiefly in the ileum, most of them attached, in some cases the head penetrating mucous and muscular coats to the peritoneum. Some of the worms were detached, and corresponding ulcerations were found. The worms are about half an inch long, males shorter and slenderer than females; color whitish; skin transversely wrinkled, producing appearance of segmentation;

the head is protractile; body cylindrical, flattened and curved ventrally, tapering abruptly anteriorly, and gradually to a rounded posterior extremity, thickest about the anterior third.

Compressed specimens show that the body of the female is filled with uterus and eggs, none of which seem to be segmented; the body of the male seems to contain only testicle; in addition to numerous muscular fibers in each. No alimentary canal can be made out. In my specimens I make out five circles of six



Neck (protracted) of male.  
*Echinorhynchus Canis.*  
4 M. M. Obj.—2" Ocular.



Middle part of body of male.  
*Echinorhynchus Canis.*  
4 M. M. Obj.—2" Ocular.

hooklets in each circle, on the spherical head, the largest anteriorly, and the arrangement regularly alternating.

As the dog wore no license tag, it is probable that he came from the country. During the summer of 1902, I made post-mortem examinations of twelve or fourteen other dogs suspected of rabies, not finding this parasite in any other. "Mad" coyotes are frequently reported in the vicinity, much more frequently than rabies is reported among domestic animals. I, therefore, think it probable that *Echinorhynchus canis* is normally a parasite of the coyote.

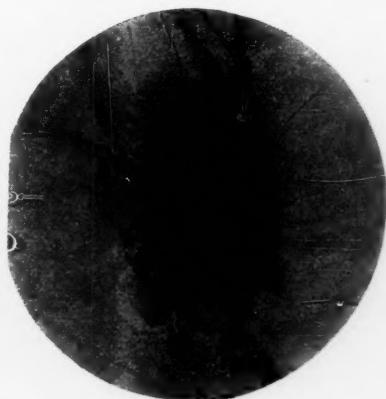


#### CHORIOPTIC SCABIES OF ANGORAS.

By J. W. PARKER, D. V. S., El Paso, Texas.

A female Angora, four or five years old, became scabby each summer, losing most of coat from back, rump, sides and abdomen. Examined in August, 1905, the disease was found to ex-

tend over two-thirds of the body, but coat not yet falling. The mohair was dry and harsh; the skin thickened and covered with a hard crust, the under part being moist; an exudate noticed at the spreading edge of the scab. Examination of scrapings with pocket lens disclosed an immense number of mites about half the



Chorioptes Communis (male)  
(from Angora goat).



Chorioptes Communis (female)  
from Angora goat.

size of *Psoroptes communis*. They were classified as *Chorioptes communis*. The goat had been with flock several years, but apparently the disease had not spread to others; no symptoms of the disease could be found on the six-months-old kid. Owner stated that the goat had been bought of a flock built up with South African importations. Chorioptic mites were also recovered from scrapings from an Angora buck said to have been from imported South African stock.

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**Indexed.**

**FOOT ROT IN SHEEP.**

By R. H. McMULLEN, D. V. S., Force of Dr. W. E. Howe, B. A. I.,  
Denvér, Colo.

In the presentation of this article no claim to originality is made, the chief purpose being to call attention to an outbreak of a disease which is rare in sections of the United States which enjoy a dry climate.

Incidentally the writer cares to state that at the outset of the outbreak his advices were disregarded, and instead, suggestions of laymen accepted, which fact resulted in a large mone-

tary loss by reason of the delay, but eventually realizing their predicament, the owners of the animals again sought the services of the writer, and the favorable termination of the outbreak resulted in some valuable "missionary work" for the qualified veterinarians in this section, as well as creating a more favorable impression for the workers of the B. A. I. in this immediate sheep-feeding territory.



**HISTORY AS PRESENTED BY THE OWNERS.**—A band of 1,100 sheep were shipped on or about March 1 last to Windsor, Colo., from Sugar City, Idaho. At the latter point, as was subsequently determined, they had been exposed to foot rot. About ten days after arrival at destination several of the animals showed lameness. This spread to such an extent that on the date upon which the writer was called, March 25, about one hundred animals exhibited evidences of foot rot, the symptoms of which are so familiar that it is unnecessary to dwell upon them at this time. A

course of rational, economical treatment was suggested, and immediate segregation of the non-infected animals was strongly urged.

It was at this point that the owners' error was committed, and "outside" advices listened to. No attempt was made at separating the animals, for laymen had ventured the opinion that the disease was due solely to muddy corrals.



One month later, April 25, when the writer was recalled, fully 900 animals were infected, and they manifested the disease in its various stages.

The writer was then given full sway, and as a consequence heroic treatment was begun in earnest. A framework was constructed, into which each diseased sheep was turned, its toes clipped, and the undermined portions of the horn removed. The animals were then placed daily in a foot bath composed of a saturated solution of Cupri. Sulphas.

Quicklime was at first spread about in the corrals, but it had the effect of hardening the horn, rendering paring difficult, so its use was discontinued.

It was found that pruning knives were the most serviceable for clipping the toes, and strong, sharp jack-knives answered very well for paring purposes.

Two weeks after treatment was begun, a cure was effected in 500 head, and they were allowed interstate movement. At the



expiration of three weeks more the remainder of the band had completely recovered, and they followed the others to market points. No mortality resulted.

The woodwork of the corrals was subsequently disinfected, the straw burned, and the infected ground plowed.

**DIFFERENTIAL DIAGNOSIS.**—Streptococcic infection of the feet; purulent inflammation of the interdigital space; foot-and-mouth disease.

Experimental inoculation produced the disease.

The *Bacillus necrophorus* was not demonstrated owing to lack of facilities.

## A KINK IN THE INTESTINES?

By Wm. D. HOWATT, V. M. D., Port Chester, N. Y.

On May 10 I was called to see a five-year-old bay gelding that the stablemen said was injured that afternoon by being stuck with a heavy load, and they would insist that it was in the gluteal region of the right hind leg; they pointed out (as usual) imaginary swelling and tenderness upon pressure, and as I could see none of it they were all in favor of sending for some other veterinarian, but didn't.

I found a case of extreme abdominal pain, the animal very violent, covered with perspiration, heart very rapid and weak, the pulse being hard to feel and catch the number of pulsations, peristalsis null, and a slight tendency to flatulence. The animal would throw himself in a corner, get up, paw and go down, roll over, get upon its back, and in every way a very severe case.

I gave one ounce of fluid extract of Cannabis Indica and waited twenty minutes; no relief; repeated Cannabis, but only one-half ounce, and no relief. In the meantime the mouth, nose, and mucous membranes of eyes became very white; no coloring at all, and as the animal seemed to grow worse, told the foreman I thought it was internal injury with haemorrhage, and that the animal was going to die.

I then decided to start the action of intestines and gave one grain of arecolin hydrobromate subcutaneously, and in about five minutes salivation started, the animal gave a very hard grunt and strained as if the bowels were to be emptied; then quieted; peristalsis started, and in a very few minutes was quiet; commenced to eat hay and the surface of the body to dry off.

I went back after supper and found him still eating and all right, but gave orders that he was to have a small amount of water and no grain. He was put to work the next morning and nothing has happened since. This horse has never had a form of colic, and always works hard since going to the present owner.

I decided that during the strain of trying to move the loaded truck that a partial kink of intestines took place and that the arecolin caused peristalsis to start, and removed the obstruction whatever it may have been. I have never known of a case where the mouth, nose and eyes became so white, and this case puzzled me, and would like to hear from others as to what they think about it.

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I have used arecolin hydrobromate in a great number of cases of abdominal troubles, and I think it is one of the most valuable drugs we have, and I feel that it does away with dopeing and pain killers so much used, as in a great many cases of acute indigestion and flatulence. I never use anything else and have been very successful with these cases.

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#### RECOVERY FROM A CASE OF TETANUS.

By W. D. HAMMOND, V. S., Blair, Nebraska.

On evening of March 28, 1909, I was called to Mr. C.'s farm, he telling me he had a case of blood poisoning. On my arrival, I found a fine Percheron mare, heavy in foal, and a bad case of tetanus; pulse 80, temperature  $104^{\circ}$  and breathing heavily. Owner explained that mare had picked up a nail a few days before. I at once dressed the wound with formaldehyde and put on a warm bran poultice, and gave hypodermically 30 c.c. P. D.'s tetanus serum. Went out again on morning of 29th, gave 30 c.c.; also in evening until April 3d and mare just holding her own, no better. On 3d I gave 45 c.c. and on 4th 45 c.c. each dose, morning and evening, and mare continued to improve. In addition I gave Fl. Ex. Cannabis Indica, Henbane and Gelsemium in two drachm doses each every two to three hours. Mare commenced to improve after second day's treatment of 45 c.c. tetanus serum, and on April 6 foaled a fine healthy colt, and mother and foal are doing well. I shall hereafter continue to give 45 c.c. or even 50 c.c. from first of tetanus serum in treatment of tetanus.

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#### SHAFT THRUST PENETRATING PLURAL CAVITY.

By Dr. J. ATKINSON WILKINSON, Oxford, Pa.

On Wednesday, June second, I was called by Mr. George Coates, of Hopewell, about two miles distant, who said he had a horse which had run a shaft in its side, and although he did not think there was any hope for it, he would like to have me do all I could. On arriving he told me the horse had been quietly standing at a post hitched when it was suddenly frightened, and wheeling around to the left broke the left shaft and the point

ran into its side. We took the horse to the stable and placed him in a box stall, after I had examined him and found the injury to be as follows:

There was a hole running back and downward about six inches above the ulna and between the seventh and eighth ribs; on carefully disinfecting the outside and my hands, I explored the hole and removed a piece of bone broken from the back of the seventh rib and found the hole penetrated into the plural cavity, and my finger came in contact with the left lung.

I immediately removed my finger and closed the outer wound, leaving a slight opening for drainage, after which I placed a wet antiseptic pad over the wound and placed slings loosely under the horse to keep him from lying down and tearing the stitches. My treatment then consisted of daily washing antiseptically of the exterior of the wound and as far into the wound as I considered safe; and internally gentian, nux vom., quinine sulph. and alcohol, alternated with small quantities of phosphorus.

The horse's temperature never rose above 103° F., although there was some pleurisy present; and in a little over a week he was turned out to pasture; and, although very stiff and lame, managed to pick some grass.

At the present time he is doing fine. I would like to add that I gave him a full dose of 30 c.c. tetanus antitoxin on my first visit.

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#### A FEW CASES TREATED WITH ANTIPERIOSTIN.

By Dr. J. E. ASSING, New York, N. Y.

Antiperiostin has proved itself a very valuable agent in my hands for the last six months, and I can truthfully say that in my opinion it is the best remedy for those cases of incipient perios-titis in horses, which usually terminate in bone spavin or splint, and which when treated under the old line methods, such as firing and blistering have been more or less unsatisfactory.

The following three cases I take from my record:

Case I.—Bay draught mare, lame on near hind for one month, starts off lame on the walk, but gets better after a little while, always lame when trotted; examination reveals a small but well marked exostosis at the hock. **DIAGNOSIS.**—Bone Spavin. Antiperiostin was applied on Nov. 15; on the 17th there was

considerable swelling and straw colored exudate; this subsided in a few days and on Nov. 23 she was put to work when she was found to be free from lameness, except that she still rested on the toe when standing, but by Dec. 1 she was entirely sound on the trot and stood with the foot squarely on the ground. This case terminated most satisfactorily, as the mare was only laid up eight days.

Case II.—Brown gelding used for light business wagon, has been going lame on off hind over a month. Examination reveals a well-marked bone spavin. Antiperiostin was applied and after three days leg is quite swollen, even up above hock; the owner is alarmed at the swelling and notwithstanding my advice to the contrary the leg is washed off; however a thick, firmly adhering scab had already formed and was not removed by the washing. This horse was taken out in about ten days and there was a very decided improvement, but still there remained some slight lameness for two weeks, after which he went sound.

Case III.—Brown draught gelding, lame off fore; walks sound but trots very lame; examination discloses a small diffused swelling just below carpus at the internal metacarpal region, painful to pressure. DIAGNOSIS.—Periostitis—Incipient Splint. Applied Antiperiostin, and on the third day the leg above the knee showed considerable oedema, after eight days he was put to work and trotted sound.

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#### AN ACCIDENT OF PARTURITION.

By Dr. J. ATKINSON WILKINSON, Oxford, Pa.

On June third I received a call from Mr. Harry Gifford, who lives about twelve miles from Oxford. He said he had a mare trying to give birth to a colt. On arriving I found the mare down and lying on her side with at least five feet of the large intestines protruding from the anus, and naturally greatly distended with gas and discolored, as the owner said she had been in that condition for at least two or three hours.

Mr. Gifford said that the mare had not been injured in any way, but that the intestines came out when she first seemed to have pain. The foal was in an anterior dorsal position with the left leg bent on itself.

Of course nothing could be done for her and she was put out of her misery.

## INTUSSUSCEPTION IN A NEW BORN FOAL.

By F. E. YORK, D. V. M., Brookfield, N. Y.

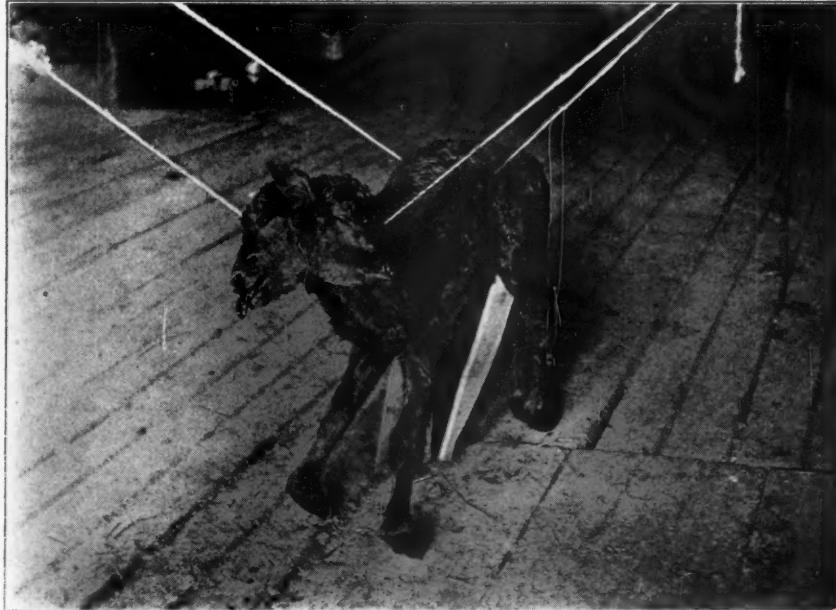
Was called early in the morning of June 6 to see a young colt about 24 hours old. The colt was found with its mother the morning before all right and strong; was active and playful during the day. On the morning of the 6th he was found sick; would not stand up much. When I arrived colt was dying.

**POST MORTEM.**—Found four invaginations in the small intestines, from one to five inches long. I would like to hear personally from any practitioner who has observed this trouble; as I have known many colts to die with the same symptoms.

## A TWO-HEADED CALF.

By O. H. TITTERUD, M. D. C., V. S., Preston, Minn.

This was a male calf, the body was of good size, the neck long and well formed. The two perfectly shaped skulls articu-



lated with but one atlas. It had four ears and four eyes. The palate of both heads were cleft; also the upper lip of the left head, deforming the right nostril, as shown in the picture.

## ARMY VETERINARY DEPARTMENT.

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### SENATE BILL 1692.

Dr. J. P. Turner, Washington, D. C., chairman Legislative Committee, A. V. A., has distributed among army veterinarians official copies of two bills "to increase the efficiency of the army veterinary service," introduced into the Sixty-first Congress, one marked "S. 1692," the other "H. R. 2735." Contrary to expectation, they are not identical bills. The House bill, introduced by Mr. Hull, is the old War Department bill in its original form, whereas the Senate bill, introduced by Mr. Warren, is a modified bill. The latter reads as follows:

61st Congress,  
1st Session.

S. 1692.

IN THE SENATE OF THE UNITED STATES.

April 15, 1909.

Mr. Warren introduced the following bill; which was read twice and referred to the Committee on Military Affairs.

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### A BILL

To increase the efficiency of the veterinary service of the army.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That hereafter the President shall have authority to appoint veterinarians in the army, not exceeding two for each regiment of cavalry, and one for each battalion of field artillery, and all veterinarians so appointed shall be on the same footing as that of commissioned officers of the army in respect to tenure of appointment, retirement, pensions, increase of pay, and subjection to the rules and articles for the government of the armies of the United States, but, except as hereinafter provided, no person shall be appointed a veterinarian in the army unless he is a citizen of the United States, unmarried, not under twenty-one nor over twenty-seven years of age, a graduate of a veterinary college of

good standing, and shall have passed satisfactorily an examination to be prescribed by the President : *Provided further*, That veterinarians now in the army who have served honorably and faithfully as such not less than fifteen years shall be the first persons eligible to appointment under the provisions of this Act and may be appointed without regard to any of the restrictions thereof, and if any such veterinarians now in service shall have reached the age of sixty-four years before the approval of this Act the President may appoint them veterinarians and immediately place them on the retired list with the retired pay of a first lieutenant, mounted : *Provided further*, That veterinarians now in the army who have served honorably and faithfully as such less than fifteen years shall be the next persons eligible for appointment under the provisions of this Act, and may be appointed without regard to any of the restrictions thereof except the restriction as to examination; but no subsequent examination shall be required for any veterinarian now in the army who shall be appointed under the provisions of this Act and who shall have served as such veterinarian for ten years or more at the date of his appointment, and any such veterinarian who shall have served honorably and faithfully as such for ten years or more at the date of his examination for appointment under the provisions of this Act, and shall be found on such examination to be disqualified for active service by reason of wounds or other disability incurred in service and in the line of duty, shall be placed on the retired list with the retired pay of a first lieutenant, mounted : *Provided further*, That of the veterinarians who shall be appointed under the provisions of this Act, those who are now veterinarians in the army and have served as such not less than ten years, and those who hereafter, on completing ten years of service as veterinarians in the army, shall pass a satisfactory examination to be prescribed by the President, shall have the pay and allowances of first lieutenants, mounted, and all other veterinarians on the active list of the army shall have the pay and allowances of second lieutenants, mounted : *Provided further*, That hereafter all veterinarians who shall be appointed under the provisions of this Act shall, in determining their status and rights under this Act or any other law, be entitled to credit for all honorable prior service rendered by them as veterinarians or veterinary surgeons in the army, and all veterinarians now in the army who shall not be appointed under the provisions of this Act shall be discharged by the Secretary of War with three months' pay.

COMMENT.—Careful inquiry into the provisions of this Senate bill shows that it differs from the House bill in two essential points; firstly, it comprises one larger section only, whereas the House bill contains nine sections; secondly, the Senate bill provides that veterinarians of over ten years of service, found disqualified by reason of physical disability incurred in service, shall be retired with the retired pay of first lieutenants, while the House bill does not provide so. It is supposed that this provision applies equally to veterinarians "who hereafter, on completing ten years of service," shall have to undergo the prescribed examination. No provision is made for the retirement of veterinarians who have less than ten years of service, neither is their re-examination demanded.

If the Senate bill should be enacted into law as it stands, the disposition of the present army veterinarians would be as follows:

To be retired with the retired pay of first lieutenants, mounted—Service, Tempany, Corcoran.

To be appointed, without examination, with the pay and allowances of first lieutenant, mounted—Griffin, Le May, McMurdo, Plummer, F. Foster, McDonald.

To be examined as having over ten years of service—Lusk, Schwarzkopf.

To be examined on completing ten years of service—

July 19, 1910: Nockalds, Stanclift, Grutzman, Glasson.

January 29, 1912: Hill, Jefferis, Peter Power, Steele, Uri.

April 15, 1912: Vans Agnew.

January 14, 1913: Lawrence.

July 22, 1913: Donovan, English, McKibbin, Peck.

Less than five years of service—R. J. Foster (1905), Hanvey (1905), Musser (1906), Stockes (1907), Mitchell (1908), Mason (1908), Williams (1908). Forty accounted for.

What the general feeling of the army veterinarians is as regards this bill is not difficult to surmise, as this has been strongly voiced for the last four years, and the provisions of the modified Senate bill do not materially differ from those of the original House bill.

We can rejoice with the three aged veterans who would be finally retired after an unprecedented long service; and we should congratulate the next six veterinarians who, heaven knows, have toiled hard under adverse conditions for fifteen years and several of them for over twenty years, now to be raised

to the pay and allowances of first lieutenants, without examination. As for the two to be examined first, of which I am one, I shall submit to another ordeal at examination, if it served no other end than to help to beat out for us the wretched discriminations that are now slowly eating up the hearts of the best of us, and in order to win "the same footing as that of commissioned officers," as the bill provides for.

With the younger veterinarians of less than ten years of service, all of us have the fullest sympathy. They have not long ago stepped into the military service with the enthusiasm of youth, confident of a secure position, now to find that it may be threatened by law. The older men think that their fears are groundless, that such a law may hit the best; we also deplore the threats of resignation from the army that have come to us from some, and sincerely hope that all will muster strength to stay in the army until their service shall count ten years and then bravely go up for the examination that shall better provide for them.

However all these fears and outbursts of feeling represent only the sentimental side of the question. It is a good thing that now almost all of us have come to understand the hard, naked facts so clearly shown by our recent experience in attempting to substitute a bill that carried with it rank and organization. It was quickly shown to be utopian. No one will try such a bill again in the near future unless he is a newcomer.

The result is that the Senate bill appears not so bad to even the most obstinate objector. It is realized now by most that the longer we obstruct the legislation proposed by the government, the better it suits unfriendly men and groups of men in the army, while at the same time it ties our hands and those of our friends in the army.

Naturally, some younger men state that the bill would meet the favor of all if it would read seven years instead of ten years, while still others say it should be amended to read five years instead of ten. But these same young men also state that the alterations suggested are personal desires that have now little show of success; that the more we shall interfere with the provisions of the bill, the less chance we have to see this or any other bill passed, and that if this bill fails to pass, it will be dished up to us again for ten years or more, so that we might just as well swallow it now than some years later.

The above constitutes a summary of the expressions given to me by quite a number of our younger men. There are not a few who are discouraged, and some are disgusted, but there is also a leaning towards favoring the Senate bill as the only means left to us to improve our status. No one has so far ventured to express any definite opinion or advise whether we shall actively work for the passage of the Senate bill, which, we were told, is the wish of the War Department.

OLAF SCHWARZKOPF.

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## CORRESPONDENCE.

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*Editors AMERICAN VETERINARY REVIEW, NEW YORK:*

The idea of an international veterinary emblem has occurred to me. The Red Cross is emblematic everywhere of sanitation and the human ministering to the sick; in fact an emblem of the human physician. Why not an emblem meaning Veterinary wherever it may be seen and used? It would seem advisable for a committee to be appointed at the forty-sixth annual meeting of the American Veterinary Medical Association for the purpose of receiving and soliciting and considering any and all designs that may be offered and then permitting a vote to be taken. It is suggested that some modification of the present Red Cross + be adopted.

Dr. BURTON ROGERS,  
Manhattan, Kan.

August 11, 1909.

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UNDER date of August 11, Ottawa, we received information of the illness of Dr. Charles H. Higgins, of the Health of Animals branch of the Department of Agriculture, Canada. At that time the doctor's illness, in the form of a nervous strain, necessitated his laying aside all work. We hope to be able to report his restoration to health in the next issue of the REVIEW.

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## ABSTRACTS FROM EXCHANGES.

### ENGLISH REVIEW.

By Prof. A. LIAUTARD, M. D., M. V.

ON STRYCHNIAE [*Prof. E. Wallis Hoare, F. R. C. V. S.*]. —Referring to the several cases of intoxication recently published, the writer says: that it seems to him that the doses advised in his work on "Veterinary Therapeutics" are too large and that greater care is necessary in prescribing it in full doses. He recalls that he has used it in two-grain doses with cows and frequently in grain doses for several days without any appreciable effects. Yet he is rather sceptical as to the real value of the drug in the treatment of the various forms of paralysis, and again there are plenty of instances of curable cases that recover without it. It is very probable that it often gets credit that it does not deserve. It would prove exceedingly useful if practitioners having experience with the use of strychnine would record their observations; for it is only by this means that it is possible to arrive at what may be regarded as a safe and effective dose. Authors have, after all, to depend on their own experience and however valuable the evidence of these may be, it cannot be compared with the practical observations of clinicians.  
—(*Veter. Record.*)

SQUAMOUS-CELLED CARCINOMA [*R. Paine, F. R. C. V. S.*]. —A merino ewe had a small growth upon the forehead about one and a half inches high. It grew rapidly in cone shape and when the ewe was slaughtered it measured three inches in height and about nine in diameter at the base. Externally it is of horny nature and has some clear fluid at its base. Its presence did not seem to interfere in any way with the general health and condition of the animal, except that after the result of a kick she remained in a semi-comatose condition. The kick had produced a large hemorrhage. The frontal bone was extensively destroyed by the growth, which was in direct contact with the brain. Upon

microscopic examination the lesion proved to be a squamous-celled carcinoma.—(*Ibidem.*)

AN ATTACK OF MANIA IN A BITCH [*Horale L. Roberts, F. R. C. V. S.*].—Toy Yorkshire terrier bitch, very nervous, shows signs of oestrus. After a week she seems over it and is taken out for her usual morning walk. Out one hour she commenced to rush about in a frenzied manner, meanwhile emitting continuous yelps. No one can quiet her; far from it she exhibits most unusual ferocity. Injections of morphine and atropine calmed her and she laid down in a comatose condition for several hours. Caffeine is injected hypodermically. Late in the evening she has three epileptic seizures. Chloral is given. The attacks returned and then she received chloral, bromide of potassium and hyosciamine, in pills which were given two or three times during the next 24 hours. Being finally quieted she had a dose of castor oil and went home. She has had no recurrence of the trouble since.—(*Veter. Record.*)

AMPUTATION OF THE UTERUS IN A COW [*Thomas D. Taylor, M. R. C. V. Sd.*].—The cow had aborted and the best thing that remained to do after, considering the condition of the case, was to amputate. "I," says the author, "secured the cow in the usual way, but did not cast her; administered a full dose of chloral, removed the placenta, applied multiple ligatures to the uterus as far anterior to the os as possible. I then excised the mass about two inches behind my ligatures and applied the actual cautery to the stump; which I returned when all hemorrhage had ceased. She was firmly trussed and given eight ounces of whiskey. When she was taken to her box she collapsed and commenced to blow violently, continuing in that condition for about eight hours when she took a quart of a warm drink, which increased the blowing considerably. In twelve hours, an improvement was noticed, the blowing subsided in twenty-four hours, she then ate a little hay. The truss was removed on the fourth day. The temperature never exceeded 103° F. The slough came out in about three weeks." Complete recovery and cow is fattening.—(*Veter. News.*)

METRITIS IN A BITCH [*J. Craig, M. R. C. V. S.*].—The animal had been put to a dog once without result, two and half years ago. She had a slight bloody discharge from the vulva. She had vomiting, loss of appetite and shortly before her death, a

slight swelling of the abdomen with loss of control of the bowels. The lesions found at post mortem were confined to the uterus. The horns and body were enormously distended and occupied a large portion of the abdomen. They were as big as a man's wrist. The weight of the organs was 3 pounds 7 ounces. The distension was caused by the presence of a greyish, slimy fluid of a peculiar sickly odor; estimated at about one quart. The mucous membrane of the uterus was congested.—(*Ibidem.*)

¶ CANINE CYSTICERCOSIS [*S. N. Miller, Calcutta, India*].—Record of the post mortem of a dog very emaciated by distemper and died after successive epileptic fits. The post mortem revealed thirteen cysts, varying in size from that of a large pea to a small areca nut in the muscular tissue of the heart. There were no other pathological changes in the body. The brain could not be obtained for examination. Examined under the microscope, the contents of these cysts were in every respect those of *Cysticercus cellulosæ*.—(*Veter. Journ.*)

CONTAGIOUS VAGINITIS IN Two Cows [*G. Mayall, M. R. C. V. S.*].—A shorthorn bull recently bought, served two cows. A few days after they whisked their tails and showed discomfort in making water. They were slightly off feed, uneasy behind and the milk supply rather reduced. There was a mucopurulent discharge from the vulva and a few ulcers on the mucous membrane. The animals were isolated and injections of mercuric iodide solution, 1 in 5,000, were made twice a day. Sulphate of magnesia, soda bicarbonate and nitrate of potash were administered. In ten days the animals were practically well. The bull was not treated; being returned to the vendor and lost from sight.—(*Ibidem.*)

INTERESTING CASE OF HYDROTHORAX—OPERATION AND RECOVERY [*Prof. T. G. Hobday, F. R. C. V. S.*].—Male greyhound, six years old, seemed "out of sorts." After a fortnight, respiration became hurried. Chronic pleurisy with effusion was diagnosed and iodide of potassium prescribed. Some short time after, about one month, paracentesis thoracis was performed on the right side, and 28 ounces of clear straw-colored fluid were removed. Improvement followed. Iodide was given for a week. The dog kept up eating and doing well. He had nux vomica for another three weeks until convalescence was established.—(*Ibidem.*)

VAGINAL FIBROMA [*H. Thompson, M. R. C. V. S.*].—Description of a large tumor from the vagina measuring 10 inches in length,  $6\frac{1}{4}$  in diameter at one part and  $18\frac{1}{2}$  in circumference at another. It weighed eight pounds. It was found in a cow in parturition which delivered a live calf. But previous to the appearance of the calf, a large fibroma had been pressed out of the passage and was hanging from the vulva by a long neck. It was attached to the left side of the vagina. A strong ligature was passed round the neck of the tumor and it was cut off. The parts being dressed with a little carbolized oil, the placenta was removed. There was no hemorrhage and recovery was without event.—(*Veter. Record.*)

FRACTURED PELVIS IN A COW [*W. Waters, M. R. C. V. S.*].—Roan, cross-bred, roomy cow, down with the third calf. She had been delivered without trouble by the owner. At the time of delivery a crack was heard as the calf's hind quarters were passing through the pelvis. The next day the cow was rather stiff on her right hind leg and had considerable swelling between the hip joint and the external angle of the haunch. Then came a large bony swelling on the left side, extending several inches above the sacral spines. There was a complete dislocation of the sacro-iliac joint. On examination per rectum was found a fracture of the neck of the ilium on the right side. The animal was very lame, could get up of her own accord but would soon lay down again. No special treatment was followed. The cow kept on giving from four to five gallons of milk a day, and with time she grew stronger on her leg and was sold three months after for her milking qualities. Later she was killed but no post mortem was made.—(*Ibidem.*)

LEAD POISONING IN MILCH COWS [*W. Waters, M. R. C. V. S.*].—The writer was called to attend to a first cow that presented peculiar symptoms: Falling off her milk and food first, and she then suddenly began to roar, broke her neck strap and rushed about the place as if she was mad. She also became aggressive. She had fits of madness, then falling in a semi-unconscious state, pawing with all four, rolling her eyeballs, grinding her teeth. No positive diagnosis was made. A second case presented similar symptoms but was very constipated. Enemas, full doses of salts were given to her. The next morning the two cows were dead, the second cow having also exhibited some brain symptoms before dying. Post mortem: Manifold and

rumen inflamed. Liver and kidneys soft and in a state of fatty degeneration. Heart had blood-stained patches on the outer surface and the left ventricle was much inflamed. The brain was soft. On making inquiries about the cause of the two attacks it was found that poisoning by lead was the cause of death; as several old paint tins with the contents licked out were found in the field where the cows had pastured. Chemical analysis of the viscera confirmed the diagnosis. A third cow became sick; again presenting the same symptoms and notwithstanding proper treatment, she also died and had similar lesions as the two others. The author calls the attention to the presence of the brain symptoms in all the cases and also to the condition of the heart, as being peculiar and not mentioned in text books.

—(*Veter. Record.*)

SPLENIC HYPERTROPHY IN THE HORSE [*W. J. Young, M. R. C. V. S., D. S., V. M.*].—The subject was about 20 years old. He presented very indefinite symptoms; loss of appetite, lassitude and pale mucous membranes. Nothing abnormal about his gait. Stimulants were given for a few days and finally the horse was destroyed. The post mortem revealed the presence of a spleen enormous and weighing 64 pounds. The splenic capsule and the trabeculae were considerably thickened and the pulp was not diffluent. From many autopsies that he has made the author concludes that spleens generally weigh more than what is mentioned in text books. While Chauveau says that "the average weight is 32 ounces, but that it may sometimes be three or four times its normal size," Doctor Young has found it weighing  $10\frac{3}{4}$  pounds in a Clydeshire gelding, 8 pounds in a cab horse, 9 pounds and 11 ounces in a Shire gelding,  $11\frac{1}{4}$  pounds in a Brewer's horse. He has also found the spleen of cats with surprising weight.—(*Ibidem.*)

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#### FRENCH REVIEW.

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By Prof. A. LIAUTARD, M.D., V.M.

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GENERALIZED CARCINOMA [*P. Valade, Army Veterinarian*].—The horse Page has been operated for a tumor of the tail, whose nature had not been established with the microscope, but

whose macroscopic appearance made it suspicious of being carcinomatous. Nearly one year after he loses his appetite, has reduced in flesh, his respiration is accelerated, his heart beats rapidly, auscultation and percussion are negative. He is placed on observation and dies in 48 hours.

**Post Mortem:** In the abdomen three litres of serosity. Intestines congested. In the mesentery of the small colon, there is a warty tumor as big as a nut. The liver is hypertrophied, weighs 20 kilogs. It is of yellow color and its parenchyma is invaded by a magma of clear yellow coloration, easily broken up. Spleen is three times its normal size, it weighs 9 kilogs. It contains nodules, some of which have an encephaloid aspect and others caseous degeneration. On the right kidney similar nodules are found. The lumbo-aortic glands are hypertrophied. The lungs are filled with secondary tumors of various sizes. Histological examination shows that these tumors were encephaloid carcinoma; and in all probability the tumor of the tail was of the same nature and the horse dies of slow and insidious generalization.—(*Rev. Gene. de Medec. Veter.*)

**GENERALIZED CANCER OF THE THYROID GLAND IN A DOG** [*M. M. Douville and R. Germain*].—The subject was a slut of six years, which had since two months an abscess of the neck. She has a cachectic appearance. On the throat and the upper part of the neck, she has two ovoid swellings, hard and almost painless, which are intimately adherent to the trachea. Situated one on each side they are united by a wide fibrous band. The left tumor, bigger than the right, has a fistulous tract from which escapes thin, reddish bad-looking pus. The lymphatic glands of the entrance of the chest are large. The temperature  $38.4^{\circ}$  C. On examination of the abdomen, the liver is felt quite large, the kidneys seem normal. The urine is clear and albuminous. Tuberculin test is negative. Though not positive, diagnosis of ulcerated cancer in way of generalization is made. The animal dies a few days after. **Post Mortem:** Cadaver emaciated, on each side of the larynx, a tumor, that of the left side bigger. On the right side there is a marked hypertrophy of the retro-pharyngeal lymphatic glands, enveloping the thyroid gland. On the left side the mass is bigger, softened in its center and hollowed. It is formed by the union of the hypertrophied glands of the thyroid body also surrounded by the neoplasm. The lymphatic glands of the entrance of the chest are

also diseased. The liver is enormous and filled with neoplastic tumors of various sizes. The gall bladder is distended with bile. The liver weighed 3 kilogs. 600 grammes. The spleen was also diseased with secondary nodules similar to those of the liver. In the thoracic cavity there were lesions of purulent pleurisy, of suppurative broncho-pneumonia. The histological examination of sections from the various lesions showed without doubt that the case was one of primitive epithelioma of the thyroid body. A TYPICAL CANCER.—(*Rev. de Medec. Veter.*)

SPONTANEOUS LACERATION OF THE RECTUM IN A HORSE [*Mr. C. A. Arnoux*].—This animal in good condition has colic and his respiration is accelerated. Auscultation reveals nothing abnormal in the lungs. The pulse is small and not too quick. The colic is mild and the horse stands quite calm on his four legs. No diagnosis is made. Stimulating frictions are prescribed on the loins and flanks. Shortly after a new symptom is observed. The horse makes violent expulsive efforts and ejects only a few balls of manure. He stretches himself and urinates. All of these are accompanied with moaning. The conjunctiva become congested, pulse thready and quick; yet the horse does not scrape the floor, does not look towards his flanks and has no tendency to tympanitis. Rectal temperature is 39° C. Painful expulsion of faeces are taking place every ten minutes. No rectal examination was made on account of the violent expulsive efforts of the horse. The symptoms soon assume a more severe character and the horse died after 24 hours of sickness. The lesions found in the abdominal cavity consisted in a sero-bloody exudation. Great hypervascularization of the peritoneum. In the pelvic cavity an enormous blackish mass is observed, formed by a fold of peritoneum and containing large quantity of faeces. The peritoneum is opened, the faeces removed and a laceration of the rectum is observed interesting the muscular and the mucous coats in half the diameter of the organ, about 15 centimeters from the anus. No cause was found to explain this traumatism; hence the conclusion of the author: Spontaneous laceration from predisposition due to weakness of the organ.—(*Rev. de Medec. Veter.*)

BILATERAL AND SYMMETRICAL MULTIPLE EXOSTOSIS IN A HORSE [*Doct. Morel*].—Presentation of half a thoracic cavity of a horse showing curious bony lesions of the ribs and spinous

processes of the dorsal vertebræ. The 18 ribs are the seat of exostosis more or less voluminous, developed at the inferior part and immediately above the chondro-costal articulations. These tumors are part of the bone, they are irregular and look like mushrooms or grapes. The biggest has the size of the fist of a man. Alongside of the diaphysis of the ribs, there are a few osteophytes protruding under the pleura. Before dissection the exostosis were covered with fibrous tissue. Their surface was smooth and they had no adhesion with the surrounding tissues. The chondro-costal joints appear normal. The false ribs are ossified. There are also on the spinous processes of the dorsal vertebræ similar exostosis, but they are less developed. The thorax was deformed only on a level with the bony deposits; the ribs had their form, length and normal direction. The lesions were alike on both sides of the chest, they were bilateral and symmetrical. Probably other parts of the body presented similar deposits. And they were in all probability due to an ossifying diathesis, perhaps of infectious nature.—(*Rev. de Pathol. Comparee.*)

TUBERCULOUS ULCERATION OF THE RECTUM [*Mr. Ch. Darmagnac, Army Veter.*].—This stallion had a bad habit, masturbates himself continuously and is reduced almost to the condition of a skeleton. He is castrated. Complication of hernia of the small intestine takes place during the operation. A few hours after he has colic and acute peritonitis rapidly manifesting itself; the horse dies in a few hours. The abdominal cavity exhibits all the lesions of peritonitis by perforation; reddish effusion with food in suspension, peritoneum highly ecchymotic. A little forward of the pelvis, and on the superior part of the rectum, there is an ulceration. Well exposed, the rectum shows an ulceration, elliptic in form, with thick indurated edges, the mucous and muscular coats are gone and there remains only little granulations under the peritoneum which is thick and adherent. The rectal lymphatic glands are hypertrophied, they have fibrous envelopes with caseous centres. The liver contains tuberculous deposits of various sizes. In the thoracic cavity, the lungs are filled with tubercles with fibrous envelopes and caseous contents. Examination under the microscope reveals the presence of bacilli principally in the scrapings of the rectal ulceration. Inoculated guinea pigs developed tuberculosis. These lesions, true surprises of post mortem, explained the con-

dition of the animal, which had been attributed to his bad habit.  
—(*Rev. Gener. de Medec. Veter.*)

Two CASES OF TRAUMATIC ARTHRITIS—RECOVERY [Mr. Urbain, Army Veterinarian].—In the majority of cases, such are incurable. These occurred in two horses, which had arthritis due, one to kick, the other to the prick of a fork, both on the left hock. The usual manifestations were present: swollen joints, great pain, no weight carried on the leg, purulent synovia escaping, high fever, temperature up in the 40° C., loss of appetite, etc., etc. Existing since 12 and 15 days, the cases had been treated with blisters, continued irrigations, injections of Van Swieten, all without results and the animals were about to be destroyed. A last attempt to treatment was followed by recovery in 20 days. This consisted in using nitrate of silver. A pencil of it seven centimeters long, was introduced in the fistula and held in place by a wadding dressing. The next day a sero-fibrinous reddish clot obliterated the fistulous tract. Without disturbing it, a second shorter pencil of nitrate of silver was introduced, and so on every two days, always carefully avoiding disturbing the clot. On the eighth day the tract was completely obliterated and from that day the symptoms subsided. The nitrate was stopped, the granulating process being controlled with burnt alum. On the fifteenth day the horses began to put weight on their legs and on the twentieth were able to take walking exercise. There remained for some time a slight swelling of the joint which did not interfere with their work.—(*Journ. de Zootechn.*)

VESICAL LITHIASIS IN A DOG [Mr. A. Bouffanais].—This is the case of a three-year-old bull dog which presented all the manifestations of urinary lithiasis and passed through the disease that carried him off, notwithstanding repeated catheterism which had given him but little relief. The post mortem was peculiarly interesting by the complications that were found: hydronephrosis, acrobystitis balanitis, etc. Opening the abdomen, the bladder was found very large, as big as a child's head and containing one and a half litres of fluid, red-brown in color, which after standing left a deposit of large calculi, weighing altogether 4 grammes and some of which were as big as a pea. The liver was yellow-brown and infectious. Both kidneys were very large and the seat of hydronephrosis. The urine that they contained was clear and free from deposits. The ureters were

normal. The prostate was a little hypertrophied. The urethra contained few calculi. At the base of the penian bone, there was a true mass of calculi which completely obliterated the canal. The glans penis was congested. There was acrobystitis and the mucus of the prepuce was swollen. The whole sheath was the seat of a large infiltration of urine.—(*Ibidem.*)

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## ITALIAN REVIEW.

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By Prof. A. LIAUTARD, M.D., V.M.

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AMPUTATION OF THE VAGINA IN A MARE [*Doct. Adolphe Luciani*].—This mare in condition, was delivered about two months ago, without difficulty, of a dead colt and of the envelopes. A few days after, she was covered again, notwithstanding the fact that the owner knew she had a small prolapsus of the vagina. This grew worse and it was only after it had been present four days that the writer was called. The vagina was forming then a big mass protruding through the vulva, and its mucous membrane much inflamed was the seat of many excoriations due to the animal rubbing against the walls of the stall. Urination was difficult and only a small quantity of urine was ejected by drops. Prolapsus of the rectum was threatening, the mare constantly making violent expulsive efforts. After disinfection with sublimate solution, the reduction was successfully attempted and a bandage of Delward applied. This failed in a short time, and the trouble returned. Chloral hydrate and morphia being resorted to then, the prolapsus was once more reduced and a pessary with a contending bandage applied. Those also failed and by the expulsive efforts pessary and bandage were soon thrown off. The animal was then cast, disinfection of the parts was made as thorough as possible and a ligature of the entire mass protruding was resorted to, carefully avoiding injury to the opening of the urinary meatus. The mass was divided into three portions and each one ligated separately insuring by this way a more complete hemostasis. After firm ligaturing the three parts were amputated with the bistouri about three

centimeters from the ligatures. Astringent sulphate of zinc vaginal washing brought the mare in convalescence in ten days.—(*Il Nuovo Ercolani.*)

A CASE OF SUPERFETATION IN A SLUT [*Doct. Antonio Ingardi*].—The author was called to help a slut to deliver. The history was that she had been covered first on a 13th of June and again on the 5th of July. On August 20th, say 68 days after the first service, she showed signs of delivery and indeed gave birth to a healthy, perfectly-formed and developed puppy. After the delivery of a perfect placenta taking into consideration the size of the abdomen of the mother, and having by manipulations detected the presence of another foetus in the left uterine horn and having also heard the weak foetal cardiac beats, by auscultation, another foetus was looked for. But it was not until six days later that the slut expelled after much expulsive efforts a female dead foetus, hairless, undeveloped, weighing 37 grammes and certainly not more than 40 days old. Evidently this was a case of fecundation of two ovules belonging to two successive periods. The slut covered the 13th of June became pregnant. The 5th of July, 22 days later, again covered, she again had a second fecundation. A first foetus was born 68 days after the first service regularly and completely to its end. Then several days after came another foetus not more than 40 days. These are facts worthy of consideration and which come to be added to the history of the subject.—(*La Clinica Veterinaria.*)

LACERATION OF THE MASTOIDO-HUMERALIS MUSCLE AND OF THE CÆSOPHAGUS IN A HORSE [*Doct. B. Germany*].—The subject had a large swelling, rather diffuse and extending from the laryngeal region to the breast and spreading laterally into the jugular grooves. It is said to be increasing rapidly. The animal carries the head extended, the hairs are standing and the skin is the seat of violent tremblings. Respiration is accelerated. The gait is uncertain behind. Rectal temperature 39.4° C. Mucous membranes congested. The skin is perfectly intact but as the animal has been standing next to one which is irritable, it is possible that the cause of the swelling be a trauma received from him. At any rate the swelling grows rapidly and although scarifications are made and give escape to an abundance of citrine fluid, it soon becomes necessary to perform tracheotomy to avoid asphyxia. Yet the animal dies the next day. Post Mor-

TEM: Citrine serosity infiltrates all the subcutaneous connective tissue of the region. The panniculus muscle of the neck is congested; between the middle and inferior third of the neck to the left of the trachea, the mastoido humeralis presents a laceration involving the two-thirds of the thickness of the muscle. And in the space of the lacerated edges there is a clot of blood mixed with putrefied parcels of food. The oesophagus presents also a solution of continuity opposite that of the muscle. The jugular and carotid are the seat of extensive inflammation. The author presents three suppositions to explain these lesions: 1st. The introduction of an irregular foreign body per mouth. 2d. A traumatic lesion from the inside, acting simultaneously with one from outside. 3d. A traumatic action applied from another horse upon the contracted muscle at the moment that an alimentary bolus was passing down the oesophagus.—(*Ibidem.*)

HYPERTROPHY OF THE SPLEEN IN A PIG [*Doct. Ruggero Fracaro*].—This animal was in good condition of nutrition. Aged about one year, it is not known to have ever been sick or having exhibited signs of colic. When slaughtered his spleen was found enormous, weighing five kilogs, 400 grammes. By its size and change of position it has also displaced the stomach. Near its apex and the lower extremity it measures in thickness about six centimeters and 10/12 at its base or superior extremity. It had a clear red color with tendency to grey, has a fibrous aspect and its serous coat has numerous small nodules of various sizes. Its trabecular system is hypertrophied and contains a substance very rich in blood corpuscles. The liver of the animal is also the seat of granular fatty degeneration and the lymphatic glands of the whole body are enlarged and of various coloration. All the other organs have nothing abnormal in their general aspect. According to the author in this case, the proportion of the spleen was greater than those observed in the case of Prof. Generalli in 1877.—(*Ibidem.*)

A CASE OF CERVICAL RIB IN A DONKEY [*Doct. Prof. Ugo Barpi*].—The writer has already published articles on various observations he has made in the vertebral column and ribs of solipeds and reports a case which he believes brings a firm confirmation of his previous communications. A young donkey whose skeleton measures 0.90 centimeters in height, presents on a level with the transverse process of the last cervical vertebrae, a bony

prolongation, existing on both sides, elongated, ending slightly in point, and rather bending backwards. The seventh cervical vertebræ is perfect in conformation and has all the anatomical characters of that bone. Opposite its unitubercular transverse process, at its inferior face, the bony prolongation, about two centimeters long is found. Unfortunately during the preparation of the skeleton, it has not been possible to see if the terminal point was continued by a fibrous or cartilaginous extension, as in this case it would have proved that it was the first rib with its prolongation.—(*Il Nuovo Ercolani.*)

DR. N. S. MAYO, of Orion, Mich., has accepted the chair of Animal Husbandry and Veterinary Science in the Virginia Polytechnic Institute (agricultural and mechanical college), and will enter upon his duties September 1.

As a result of the practice act recently passed in the State of Colorado the governor of that commonwealth has appointed a state board of veterinary examiners. The governor's wisdom has been exemplified in the appointment of the following gentlemen on the board: Drs. W. W. Yard and Brocker, of Denver, and Dr. Geo. W. Dickey, of Colorado Springs.

UNDER the heading "The Docking of Horses," the *Live Stock Journal*, Chicago, of July 22, quotes President Rutherford, of the A. V. M. A., as follows:

"The majority of horses look much better undocked, and the practice is, after all, only a fashion or fad, which undoubtedly can be abolished without injury to anyone and at a great saving of pain and discomfort to the equine species. Not only is the operation itself painful, but the subsequent life-long annoyance and irritation to which docked horses are subjected in the summer time from the attack of flies especially when at pasture, is in itself a sufficient argument against the practice. I was pleased to see that Dr. James, one of our city veterinary practitioners, had the courage to come out openly over his own signature denouncing the practice, and stating that from this time on he would never dock another horse. It would be a good thing if all veterinary practitioners through the country would take the same views, as their influence in bringing about a change in public opinion on this point would be very great."

It is with much pleasure and satisfaction that we here reproduce the sentiments of the Veterinary Director-General of Canada, with whom we are in accord on the subject.

## SOCIETY MEETINGS.

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### VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The twenty-fifth anniversary of the organization of the Veterinary Medical Association of New Jersey was celebrated at Atlantic City, July 15-16, 1909.

The association assembled in the parlors of the Hotel Raleigh, July 15, at 2 p. m., with President J. B. Hopper in the chair. The following members were present: Carter, Christy, Conover, Fredericks, Glennon (James T.), Hendren, Horner, Hurley, Jones, Lindsay, Little, Loblein, Lowe (J. Payne), Lowe (William Herbert), Magill, McDonough, Paulin, Read, Rogers (Thomas B.), Runge, Smith (Thomas E.).

The following guests were also present: Hon. Franklin P. Stoy, Mayor of Atlantic City; Hon. Franklin Dye, Secretary of the New Jersey State Board of Agriculture, Trenton; Frederick C. Minkler, Professor of Animal Husbandry, New Jersey Experiment Station, Rutgers College, New Brunswick; James Hunter, Jr., M. D., Westville; Dr. Benjamin Pierce and wife, Springfield, Mass.; Prof. S. J. J. Harger, University of Pennsylvania; Dr. John Reichel, Bacteriologist of the Live Stock Sanitary Board of Pennsylvania, and wife; Hon. T. E. Burke, President Board of Fire Commissioners, Newark, N. J.; Dr. C. J. Marshall, Vice-President American Veterinary Medical Association, Philadelphia; Mr. Walter I. Rogers, Woodbury, N. J.; Dr. F. H. Schneider, Philadelphia; Dr. William J. Lentz and wife, Philadelphia; Dr. M. W. Drake, Philadelphia; Dr. Otto G. Noack, Reading, Pa.; Dr. Thomas Castor, Philadelphia; Dr. L. J. Belloff, New Brunswick, N. J.; Dr. T. E. Smith's mother and niece May, Jersey City; Dr. James T. Glennon's mother and son Edward, Newark, N. J.; Mrs. John B. Hopper, Ridgewood; Mrs. J. H. Conover, Flemington; Mrs. J. B. Jones, Atlantic City; Miss McLoughlin, Philadelphia; Mrs. A. E. Hanner, Newark; Mrs. H. W. Read, Freehold; Mrs. R. W. Carter, Jobstown; Mrs. Werner Runge; Mrs. S. G. Hendren, Montclair; Mrs. William Herbert Lowe, Paterson.

The president introduced Hon. Franklin P. Stoy, Mayor of Atlantic City, who extended a most cordial welcome to all those in attendance. Dr. Wm. Herbert Lowe in behalf of the association and its guests responded to the Mayor's address in an appropriate manner.

TELEGRAM FROM THE ALUMNI ASSOCIATION OF UNIVERSITY OF PENNSYLVANIA.

Hartford Depot, Conn., July 15, 1909.

Veterinary Medical Association of New Jersey.

Dr. Wm. Herbert Lowe, Secretary,  
Hotel Raleigh, Atlantic City, N. J.

For the past twenty-five years our hearty congratulations.  
For the years to come, best wishes and the helping hand.

Alumni Association, Veterinary Dept., University of Pennsylvania. Colton, President.

AFFECTIONATE SOUVENIRS FROM PROFESSOR LIAUTARD.

(This letter was received too late to be read at the meeting, but is included in this report, for the benefit of those interested.)

Paris, France, July 8, 1909.

Dr. Wm. Herbert Lowe, Secretary.

My. Dear Doctor.—Your very kind letter of June 28 reached me this a. m. If I was what I used to be, I might take the boat to-morrow, but even then I would be too late, as at best I could not reach your meeting until it would be over. This letter will indeed arrive in my place and that not before the 17th. At any rate let me tell you how I appreciate your invitation; let me assure you of my warmest and sincere wishes for your association and yourself personally, and ask you to convey to your colleagues the affectionate souvenirs of one who would be so happy if he could only once again visit you.

Yours very cordially,

A. LIAUTARD.

Excellent papers were read and ably discussed as follows: "The Standardization of Drugs," Dr. T. B. Rogers, Woodbury; "Demonstration of Arsenic Tests," Mr. Walter Irving Rogers, Woodbury; "Methods Employed in the Eradication of the Recent Outbreak of Foot-and-Mouth Disease," Dr. S. G. Hendren,

Montclair; \*“Opportunities for Live Stock Breeding in New Jersey,” Prof. Frederick C. Minkler, New Brunswick; “The Responsibilities of the Veterinarian in Matters of Public Health,” James Hunter, Jr., M. D., Westville.

The banquet was held at the Hotel Raleigh on the evening of July 15, and was an affair long to be remembered. President Hopper officiated as toastmaster in a most entertaining manner. The following toasts were responded to: “Our Past Presidents,” Dr. E. L. Loblein; “Veterinary History,” Dr. William Herbert Lowe; “The Agriculturist and the Veterinarian,” Hon. Franklin Dye. Hon. T. E. Burke was called upon and responded to the toast “Our Guests” in a very humorous and entertaining manner.

Dr. R. R. Ramsey, Jersey City, was elected to membership. The resignation of Dr. Archibald McBride, Jersey City, was accepted.

Chairman Lindsay of the Legislation Committee reported progress.

The committee on the McDonough Five-Calked Horse Shoe reported favorably and a number of practitioners reported great benefit from the use of the five-calked shoe.

On motion of the secretary, duly seconded by Dr. Loblein, the action of the state authorities in purchasing stallions for the improvement of the draft horses of the state was endorsed by a unanimous vote. Dr. C. J. Marshall extended an invitation to his New Jersey confrères to attend the next meeting of the Pennsylvania State Veterinary Medical Association to be held at Lancaster, August 31.

The president appointed delegates as follows: Pennsylvania—Drs. Hurley, Harker, Carter, T. B. Rogers, McDonald and Little. New York, at Ithaca—Drs. J. Payne Lowe, J. T. Glennon, McDonough, Loblein, Lindsay. American Veterinary Medical Association, at Chicago—Lindsay, Magill, Horner, Hurley, T. B. Rogers, Runge and Jones.

After the transaction of routine business the association adjourned to meet at Jersey City January 13, 1910.

WM. HERBERT LOWE,  
Secretary.

## MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION.\*

The twelfth semi-annual meeting was called to order at Stillwater, Minn., July 14, 1909, by the president, Dr. C. E. Cotton, at 10 a. m. Roll call showed thirty members present.

Reading of the minutes of the last meeting dispensed with on motion of Dr. Amos, seconded by Dr. C. A. Mack.

Address of welcome by Mayor J. W. Foley, who delivered a short but touching address, which was ably responded to by Dr. M. H. Reynolds.

Moved by Dr. Amos, seconded by Dr. LaPointe, to extend a vote of thanks to Mayor Foley for his able address of welcome. Carried. Dr. Cotton spoke very feelingly on the address of welcome in extending the vote of thanks to Mayor Foley. Treasurer's report read and accepted subject to the report of Finance Committee at the end of the year.

Dr. C. A. Mack gave a very elaborate report on "Colleges," which was accepted, and discussed by Drs. Cotton, Reynolds and S. H. Ward.

Dr. Ward, in the absence of the Committee on Infectious Diseases, gave a report on "Government Investigations of Foot and Mouth Disease Originating from Vaccine of Cow Pox." The doctor then, as chairman of the Committee on Legislation and Empirics, reported on the bills that had been introduced relative to testing of cattle, etc.

Dr. Ward L. Beebe, not being present, his report on Bacteriology was read by the secretary.

After the reception of six applications for membership, an adjournment for luncheon was called.

A Directors' meeting was called at 1.30 p. m., and the meeting reconvened at 2 o'clock. In the absence of Dr. McKenzie, Dr. La Pointe reported on "Surgery." Dr. W. Amos reported on "Medicine." Dr. M. H. Reynolds submitted a report of the Examining Board.

The Resolution Committee not having a member present, President Cotton appointed another committee who rendered the following report:

**RESOLUTION.**—Resolved, That the veterinary profession of Minnesota condemn the method of deception adopted by Dr.

\*Committee reports and papers will appear in another number.

David Roberts to lull the people into a fake sense of security. That no one desirous of relieving the burdens of the public and claiming a professional degree resorts to expensive advertising to help them by appealing in this way for their money, but makes known any discovery of merit through the channels of the professional association. His claims are such as characterize them as not well founded, and if it was not for thoughtless endorsements of agricultural experiment stations often given by employees, the implied endorsements by reputable agricultural and breeders' journals, whose commercial ends often prostitute their reading columns to the deception of their readers as well as encouraging them to part with their money for remedies that have not been proven more valuable than lines of treatment well known by every trained and educated veterinarian, this association would regard such a resolution as the present unnecessary, and such advertising schemes as beneath its notice.

**RESOLUTION ON THE DEATH OF DR. PRICE.**—Whereas, It has pleased the Almighty to call from our midst our beloved friend and valued member of this association, therefore, be it

Resolved, That we, the members of this association, assembled here, do hereby express our heartfelt sympathy to the sorrowing wife and family of our departed friend, Dr. Richard Price. And that a copy of these resolutions be sent to the bereaved family and also spread on the minutes of this association.

DR. J. W. GOULD,  
DR. L. HAY,  
DR. W. AMOS.

Dr. Walter Amos presented a paper on the subject of "Our Society's Welfare." It was recommended that this paper be copied and a copy sent to each member.

Dr. C. C. Lipp read a very interesting paper on the subject of "Leucocytes and Tissue Metabolism."

Dr. Reynolds presented a very instructive paper on the "Practical Results of the Sero Vaccine Treatment for Hog Cholera."

Dr. Humphry (M. D.) in the absence of Dr. Bolyen (M. D.), read a paper on the "Transmissibility of Human Tuberculosis," which was well written and ably defended.

Dr. Coffeen reported a very interesting case of swamp fever in twelve (12) head of horses in different camps, losing only two (2) out of twelve (12) in nine (9) weeks' treatment. In treat-

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ing these cases he used large doses of Fowler's solution, 2 oz. every dose, three or four times a day, and 2 oz. of a solution of quinine in alcohol every four (4) hours, and after a few days giving Fowler's solution three (3) times a day.

Dr. Cotton urged all members to attend the A. V. M. A. at Chicago. Meeting adjourned.

At 8 p. m. fifty members and ladies sat down to the banquet table at the Sawyer House, and a spread was served fit for a king. After the feast Dr. Cotton, acting as toastmaster, called upon the following, who responded in a very fitting manner: Dr. W. Amos, "The Veterinarian's Duty to His Profession"; Mrs. C. A. Mack, "Our Guests"; Dr. J. N. Gould, "The Veterinarian Politically and Socially"; Judge F. J. Wilson, "Live Stock Industry"; Mrs. G. Ed. Leach, "The Veterinarian in Home Life"; Dr. S. H. Ward, "The Ladies." Supt. Geo. Jarcho was called upon and made a few points with short stories.

The next day was spent in sight-seeing, visiting the State Prison, a trip on the river in launches, ending with a very enjoyable time at dinner at the Anchorage, twelve miles below Stillwater, and a lovely trip home in the evening. Everyone went away more than pleased with the meeting and entertainment.

DR. G. ED. LEECH,  
Secretary.

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#### ALABAMA VETERINARY MEDICAL ASSOCIATION.

The Alabama Veterinary Medical Association held its second annual meeting at Auburn, Alabama, July 23 and 24, 1909, at the Veterinary Department of the Alabama Polytechnic Institute. President C. C. Thach delivered a most excellent address of welcome to the visiting veterinarians. Dr. C. A. Cary gave an informal talk on the applications of the State Live Stock Sanitary Law of Alabama. Dr. W. A. Scott, of Columbus, Ga., read a very interesting paper on Septic Metritis in cows. The treatment of tetanus was then discussed by all the veterinarians present. A variety of opinions were expressed and various treatments were suggested. Dr. G. W. Browning, of Montgomery, Ala., then read a paper on "Echinacea Angustifolia in the Treatment of Influenza." The doctor has had remarkable success with this drug, not only in influenza, but also in azoturia. Dr.

I. S. McAdory, of Auburn, Ala., then read a paper on "Chorea in Dogs," in which he discussed at some length the more recent treatments for this trouble. Dr. W. L. Thornton then gave a demonstration in the Physiological Laboratory of the Veterinary Department to show the effect on the compression of a turtle's heart between the ventricle and the auricle. Slight compression did not prevent the wave of contraction passing regularly from the auricle to the ventricle through the bundle of His. Greater compression stopped the ventricle, and left only the auricle beating. Doctor Thornton also gave a demonstration of a simple and practical method of obtaining the approximate measure of the blood pressure in the horse. Dr. M. F. Jackson, of Birmingham, Ala., gave an interesting talk on the methods of treating azoturia. The doctor places great stress on the employment of slings and the use of strychnine to make the animal stand in the sling. He reported excellent results with this treatment. Dr. J. A. Kiernan, Federal Veterinarian in Charge of Tick Eradication in Tennessee, Mississippi and Alabama gave an interesting talk on the progress and value of tick eradication in Alabama. The doctor stated that tick eradication was the most important and valuable movement in the interest of agricultural improvement that had been undertaken by the Bureau of Animal Industry. This paper led to unanimous endorsement of a resolution favoring tick eradication, and calling upon the United States Government, various states interested and the county officials in all the counties of tick-infested states to put more money behind this work, and to lend their influence in an educational campaign, and in actual work to wipe the tick off the map of the United States. A general discussion on the differential diagnosis and treatment of sunstroke brought forth lively and interesting remarks from all the members present. Some confusion seemed to prevail as to the best treatment, also some disagreements as to diagnosis, but the consensus of opinion seemed to prevail that there was no specific treatment, and that all cases were not identical in their manifestations. The differentiation of osteoporosis and rheumatism was next considered. Most of them agreed that there were cases where a positive set diagnosis could not be made, especially in the early stages of osteoporosis in which there was no enlargement of the bones. Some thought it possible that the two diseases might be present in the same animal at the same time. Dr. P. F. Bahnsen of Americus, Ga., then read a very interesting and instructive paper on "Differential

Diagnosis of Colics." The doctor apparently takes the ground that colics embracing a variety of conditions which involve the alimentary canal from the stomach to the rectum. This paper was most extensively discussed, and it also brought forth, as usual, a variety of opinions and methods. It is very probable that the next annual meeting of this association will be held in Mobile, Alabama.

Seven visiting veterinarians and sixty farmers from various parts of the state were present. Seven new members were elected. Dr. P. F. Bahnsen, of Americus, Ga., was elected an honorary member of the association.

C. A. CARY.

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#### THE VERMONT VETERINARY MEDICAL ASSOCIATION.

The second semi-annual meeting was held at the Berwick House, Rutland, Vermont, July 27, 1909. The meeting was called to order at 2.30 p. m. by the president, Dr. F. C. Wilkinson, with nine veterinarians in attendance. Proceedings of the February meeting were read and approved.

Remarks by the president, Dr. F. C. Wilkinson: "Gentlemen, I cannot but feel that I am placed in a very honorable position as your president, and at the same time that it is a position I cannot fill in the complete way that I should wish; but since you were so good as to choose me as the first president of the Vermont Veterinary Medical Association, I will do all in my power to make up for my deficiencies, and I sincerely hope that this association may not suffer from your choice. Now, gentlemen, before going further, allow me to thank you exceedingly for your kindness in electing me your president. I will ask your kind indulgence to my faults and shortcomings, and that you will, one and all, assist me in carrying out the duties of the chair. With that assistance from you, which I am sure you will render to a brother, my share of the responsibilities will be immensely lightened.

NEW MEMBERS.—Dr. Robert Wier, Rutland, Vt.; Dr. G. H. Farnsworth, Rutland, Vt., and Dr. A. C. Brodeur, Bellows Falls, Vt., were duly vouched for and elected to membership.

The Committee on Association Seal, Dr. Stevenson, chairman, made its report, as to form, size and inscription of seal.

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Motion by Dr. Robert Wier, seconded by Dr. J. C. Parker, that the president be empowered to fill temporarily any vacancies arising among the officers. Carried.

PROGRAM.—“The Veterinarian in General,” by Dr. J. C. Parker. Discussed by Drs. Robert Wier, F. C. Wilkinson and J. C. Parker. “Faults (Veterinary Advertising),” by Dr. O. E. Barr; discussion by Dr. F. C. Wilkinson. “Parasitic Enteritis (Translation),” by Dr. F. C. Wilkinson; discussed by Drs. O. E. Barr and J. C. Parker. Report of Cases—Tetanus, by Dr. F. C. Wilkinson; discussed by Drs. O. E. Barr, F. C. Wilkinson, J. C. Parker, Robert Wier and R. J. Vosburgh. “A Disease Similar, if not Meningitis,” by Dr. Geo. T. Stevenson; discussion by Drs. Robert Wier, F. C. Wilkinson, J. C. Parker, R. J. Vosburgh and F. W. Chamberlain.

Motion by Dr. F. W. Chamberlain, seconded by Dr. Geo. T. Stevenson, that an official stenographer be employed at our meetings, that more complete proceedings may be secured for preservation. Carried.

Executive Committee decided that the next regular meeting of the Association be held at White River Junction, January 19, 1910.

A motion by Dr. Parker, seconded by Dr. Geo. H. Farnsworth, that the secretary provide a banquet for the next meeting of the Association, each member present bearing his share of the expense. Carried.

The members enjoyed a social time. Adjourned 6 p. m., July 27, 1909.

FRANK W. CHAMBERLAIN,  
Secretary-Treasurer.

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#### SCHUYLKILL VALLEY VETERINARY MEDICAL ASSOCIATION.

The annual session of the Schuylkill Valley Veterinary Association was called to order by Dr. Geo. R. Fetherolf, who occupied the chair in the absence of the president and vice-president, at the Board of Trade Room, Reading, Wednesday, June 16. After roll call the minutes of the previous meeting were read and approved.

A few interesting communications were read. The Committee on Meat and Milk Inspection reported favorably on the work of milk hygiene. They offered the following resolution:

We, the Schuylkill Valley Veterinary Association, in convention assembled, believe that the system of milk and meat inspection promulgated by the Board of Council of Reading has already shown its worthiness. We, therefore, heartily commend the city council for instituting meat and milk inspection for protection of the honest dealer and consumer, and in fighting tuberculosis, this serious disease. Again, we, furthermore, endorse the stand taken by the Retail Butchers' Association in supporting milk and meat inspection and deplore the fact that the milk-men who are in favor of inspection are seemingly trying to obstruct the progress of the city.

Election of officers resulted as follows:

President—I. C. Newhord.

Vice-President—A. R. Potteiger.

Recording Secretary—W. G. Huyett.

Corresponding Secretary—C. D. Graber.

Treasurer—U. S. G. Bieber.

All the officers were elected by acclamation upon a motion.

ESSAYS AND PAPERS.—Valuable case reports were offered in Dr. Huyett's paper, and brought forth much discussion.

An essay entitled "The Great Importance of Milk Inspection" was read by Dr. Geo. R. Fetherolf, City Milk and Meat Inspector, who deserves much credit for such an able paper.

Adjourned. Next meeting of this organization is Wednesday, Dec. 15, 1909.

W. G. HUYETT,  
Secretary.

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#### MAINE STATE VETERINARY ASSOCIATION.

#### RESOLUTIONS ADOPTED BY MAINE STATE VETERINARY ASSOCIATION.

Whereas, At a meeting of the Maine State Veterinary Association held at the Bangor House in the city of Bangor, on the fourteenth day of April, A. D., 1909, it having been shown that certain Doctors of Veterinary Surgery holding positions as Veterinary Inspectors, with fair and equitable compensation and en-

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joying the prestige and influence which said positions carry, and utilizing said positions to increase their private clientele to the damage and financial loss of all the other members of said association at said Bangor, the said association at said Bangor meeting, unanimously

Resolved, That the said Government Inspectors be compelled by the Bureau of Animal Industry to devote all their time and energy to the duties of said positions; that they retire from private practice or from their positions as Government Inspectors, and it was further

Resolved, That if any or all of said Government Inspectors refuse to retire from practice that their resignation as said Government Inspectors be requested, and if refused that said Government Inspectors be discharged; and it was further

Resolved, That a copy of these resolutions be forwarded to Dr. Melvin, Chief of Bureau of Animal Industry and to the AMERICAN VETERINARY REVIEW, of New York.

W. H. LYNCH, D. V. S., Portland.  
C. L. BLAKELY, M. D. V., Augusta.  
I. L. SALLEY, D. V. S., Skowhegan.

Committee on Resolutions.

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#### THE VETERINARY ASSOCIATION OF MANITOBA.

The semi-annual meeting of this association took the form of a clinic at the Agricultural College, on Wednesday, July 14, the following members present: Drs. Bryant, Dauphin; S. A. Coxe, Brandon; W. A. Dunbar, Winnipeg; J. F. Fisher, Brandon; J. A. Hackett, Hartney; G. P. Hayter, Birtle; W. Hilton, Winnipeg; A. G. Husband, Belmont; J. J. Irwin, Stonewall; M. Little, Pilot Mount; W. Little, Boissevain; D. H. McFadden, Emerson; C. D. McGilvray, Winnipeg; J. D. McGillivray, Winnipeg; L. McQueen, Selkirk; W. Manchester, Wawanusa; M. B. Rombough, Winnipeg; S. Robinson, Brandon; W. H. Smith, Carman; M. B. Stiver, Elgin; J. H. Todd, Grand View; F. Torrance, Winnipeg; E. P. Westell, Winnipeg; A. E. Williamson, Winnipeg; and T. Z. Woods, Winnipeg. Visitors, Drs. Cook, of Winnipeg, and Grenside, of New York.

The cases presented for treatment were:

Case I.—Chronic tendonitis in front leg. Treatment—actual cautery in lines. Operator, Dr. J. F. Fisher.

Case II.—Ringbone. Treatment—actual cautery in lines. Operator, Dr. C. D. McGilvray.

Case III.—"Roaring." Treatment—removal of part of the vocal chord with suture of the remainder. Operator, Dr. Rombough.

Case IV.—Cryptorchid. Operator, Dr. Bryant.

Case V.—Tendonitis and incipient navicular arthritis. Treatment—median neurectomy. Operator, Dr. Torrance.

After the clinic the members were entertained at lunch in the dining room of the college and then inspected the different buildings and their equipment.

F. TORRANCE,  
Secretary-Treasurer.

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#### SOUTH DAKOTA STATE VETERINARY MEDICAL ASSOCIATION.

The ninth annual meeting was held at the Auditorium, in Sioux Falls, July 13 and 14, 1909, Dr. C. McDowell presiding. President McDowell gave a very interesting opening address, which was followed by the regular business meeting.

The election of officers resulted as follows:

President—C. D. Tuttle, Canton, South Dakota.

First Vice-President—S. W. Allen, Watertown, South Dakota.

Second Vice-President—Hallerscheld, Aberdeen, South Dakota.

Secretary-Treasurer—J. A. Graham, Sioux Falls, South Dakota.

Thirteen new members were elected.

The examining board met for the first time, as the law became operative July 1. There were 26 applicants for examination, 23 of whom passed the board.

Forty-two non-graduates were licensed under the five year clause. The examining board consists of the following gentlemen: E. L. Moore, Brookings, S. D.; J. P. Foster, Huron, S.

D.; C. McDowell, Watertown, S. D.; J. C. Trotter, Beresford, S. D.; J. A. Graham, Sioux Falls, S. D.

The afternoon was devoted to a clinic, which was conducted at the Graham and McGilvray Veterinary Hospital. In the evening a banquet was enjoyed by the members and their wives at the Cataract Hotel. Several interesting addresses were given by members of the association. The next meeting will be held in Sioux Falls, July, 1910.

J. A. GRAHAM,  
Secretary-Treasurer.

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#### CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of the Connecticut Veterinary Medical Association was held on Aug. 3d at Dr. Thos. Bland's Veterinary Hospital, Waterbury, Conn., Dr. P. T. Kelley presiding. Twenty-three members were in attendance.

The clinic commenced about 11 a. m. The first subject was a 10-year-old driving mare. History—A kicker and unsafe to drive or to go near her hind extremities. Oophorectomy was performed by Dr. V. M. Knapp, of Danbury. Both ovaries were very large and cystic.

Spaying bitch median line, Dr. C. H. Beere.

Spaying bitch flank operation, Dr. F. C. Bushnell.

Castration of cryptorchid, Dr. Thos. Bland.

Opening the larynx of a horse that had been operated upon for roaring on the 9th of January, this year; the union of the cartilage to the laryngeal wall was perfect, the cicatrix not being perceptible. Two tufty growths were found about an inch long on either side of the larynx posterior to the arytenoid cartilages. These growths were clipped away with curved scissors and cauterized with the platinum cautery. There seemed to be no narrowing of the lumen of the larynx, although the larynx itself was considerably hardened, showing commencing ossification. Operators—Loveland, Knapp and Bland. Anæsthetizer—Lyman.

A very interesting and instructive operation was performed by Dr. R. P. Lyman, removing about three inches of intestine from a fox terrier bitch.

At this writing all the animals operated upon have made a perfect recovery.

After the clinic the members enjoyed a banquet at the Abagadasset Club, where many pleasant toasts were indulged in. Discussions relating to the clinic and many other subjects were the features of the evening.

B. K. Dow,  
Secretary.

THE brood-mare Flair, from the estate of the late Sir Daniel Cooper, brought \$80,000 at Tattersall's, London, recently.

THE investigation by the United States Department of Agriculture into the charges against the meat inspection service under the B. A. I., by J. T. Harms, has shown them to be groundless.

THERE'S room for both the automobile and the horse, and although if the horse is skittish the automobile may crowd him into the ditch, it isn't likely to crowd him to the wall. The old family nag will long maintain his supremacy in his own field. The human love for horse flesh can't be narcotized by mere machinery.—*The Hartford Times*.

DR. F. C. GRENSIDE, of New York City, has recently returned from an extended trip through Canada and the Northwest. Going, the doctor attended the meeting of the Veterinary Association of Manitoba and the industrial fair at Winnipeg, then went on to Vancouver and down to Seattle, where he attended the Alaska-Yukon Exposition; then, coming home, visited Kansas City, spending some time with the veterinarians of that place and visiting the Kansas City Veterinary College, and, at Chicago, doing likewise. A month was devoted to the trip.

SAYD Abd-el-Kader: "A thoroughbred horse is one that has three things long, three things short, three things broad, and three things clean. The three things long are the ears, the neck and the forelegs. The three things short are the dock, the hind legs and the back. The three things broad are the forehead, the chest and the croup. The three things clean are the skin, the eyes and the hoof." Also: "If a horse, when drinking from a stream that flows level with the ground, can remain upright on all fours without bending either of his forelegs, be assured that his form is perfect, that all parts of his body harmonize and that he is thoroughbred."—*Rider and Driver*.

## NEWS AND ITEMS.

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DR. J. MARTIN RICE, Bobcaygeon, Ont., Canada, has gone to England to take up post-graduate work at the Royal Veterinary College, London, under Sir John McFadyean.

DR. A. T. FERGUSON, of Marshall, Texas, has gone to Amarillo, that state, to assume charge of the stock yards there during the absence of Dr. Hugh Maxwell who has gone to Canada to take a post-graduate course. Dr. Maxwell will return to his post next April.

THE faculty of the Department of Veterinary Medicine at the University of Pennsylvania is being enlarged and reorganized. Dr. John W. Adams, who has been Professor of Veterinary Surgery and Obstetrics for several years, will continue in that position, but will devote all of his time to the work of the school and the hospital, instead of a part of his time as heretofore. He will also have charge of the surgical clinic in the hospital. Dr. C. J. Marshall, who has been Demonstrator of Clinical Medicine for several years, has been elected Professor of Veterinary Medicine, and will have charge of the medical clinic in the hospital. Dr. W. J. Lentz has been elected Assistant Professor of Veterinary Surgery and Obstetrics, and Dr. Stephen Lockett, Assistant Professor of Veterinary Medicine. Drs. Marshall, Lentz and Lockett will also give all their time to the work of the school and hospital. The reorganization has not yet been completed and additional appointments will be announced later. Another portion of the new building and equipment will be ready for the use of the students when they return at the opening of the session in September.

FEDERAL QUARANTINE BECAUSE OF SHEEP SCAB IN KENTUCKY.—The disease of sheep known as scab or scabies has become so prevalent in Kentucky that the Secretary of Agriculture has considered it necessary to declare a quarantine. This action comes after a thorough examination into conditions. The fact that the disease is contagious, being spread by parasites known as scab mites, makes necessary a measure of protection sufficient

to prevent its spread into other states. Infection is known to exist to a slight extent in two adjoining states, but conditions there are not serious enough to require Federal quarantine.

The order for the quarantine, which is effective August 16, provides that sheep shall be moved interstate from Kentucky only under the following conditions: Sheep that are diseased with scabies and that have been dipped once in an approved dip under the supervision of an inspector of the Bureau of Animal Industry within ten days before shipment may be shipped interstate to a recognized slaughtering center for immediate slaughter. If diseased sheep are to be shipped interstate for stocking or feeding purposes, they shall be dipped twice with an interval of ten days. Other sheep may be moved interstate for feeding or stocking purposes after one dipping under government supervision, or they may be shipped interstate under quarantine restrictions for immediate slaughter without dipping.

Inspection and dipping under the regulations will be performed only at points where Federal inspectors are stationed. Louisville is at present the only place in the state having dipping facilities, but if proper yarding and dipping facilities should be installed at other points, the Department of Agriculture would consider the advisability of establishing inspection at such places for the convenience of shippers.

For many years sheep scab has been quite prevalent in the West, but as a result of the combined efforts of the Federal and state authorities much territory has been entirely freed and the infection in other sections has been greatly reduced, and it is hoped that within a few years more the disease will be entirely stamped out. This is the first time that the disease has obtained a sufficient foothold east of the Mississippi River to require a Federal quarantine.

Information regarding the conditions of the quarantine and details of treatment and handling may be obtained free by addressing a request to the Bureau of Animal Industry, Washington, D. C.—From the Bureau of Animal Industry, United States Department of Agriculture, Washington, D. C.

**THE SCORE-CARD SYSTEM OF DAIRY INSPECTION.**—Modern investigations in dairy sanitation have shown the importance of producing and handling milk under clean conditions, and a significant factor in attaining that result is the score-card system of dairy inspection, according to Messrs. Clarence B. Lane and George M. Whitaker in a report just published by the Bureau

of Animal Industry of the United States Department of Agriculture. The main advantage that they attribute to the score-card system is that it deals with itemized conditions. City milk inspection a few years ago was merely a matter of detecting added water or preservatives. With recent progress in sanitary science the work has broadened, and boards of health are now investigating the sanitary phases of milk production, transportation and distribution.

In the smaller cities most of the milk consumed is retailed by the producer, and even in places of considerable size many producers are also retailers. In cases where the functions of producer and retailer are merged in one person an inspection of the dairy farm discloses the methods of distribution as well as production, and the dairy farm score-card answers all purposes under such conditions.

As cities grow, middlemen become a necessity and their places of business are more familiarly known as "plants." These plants have wide range of capacity, equipment and methods. One extreme is a building 300 to 400 feet long on a spur of a railroad where milk is received by the trainload, cooled, mixed, filtered, perhaps pasteurized, canned or bottled, and held in cold storage until retailed in the city. The other extreme is the dealer retailing only a few gallons who may have no plant and his equipment consist of only a carrier can and a quart measure which were washed in the kitchen sink with the family dishes; or he may have fitted up the dark, illy ventilated basement of his residence as a "milk plant," with a wooden tank for cooling the milk, a few dozen bottles, a washtub in which to cleanse them, a dipper for filling, and a brush to agitate luke-warm water inside the bottles. It does not necessarily follow that all small dealers adopt improper practices, but the chances are that the ordinary milkman with small capital and only a little at stake will not take as much care as a person differently situated.

For the past two years the Bureau of Animal Industry through its Dairy Division has been making a study of dairy inspection with a view to developing a system that would be practical and comprehensive, and has assisted the authorities of a number of cities in different sections of the country in applying such methods for the improvement of their milk supplies. Some results of this work, together with instructions for using the score-card system, are given in the publication

referred to, which may be had by addressing a request to the Bureau at Washington, D. C., for Circular 139.

A striking example of the possibility of improving dairy conditions through the score-card system is shown in the report of 20 dairies at Richmond, Va., which made the greatest percentage of gain from the first score to the last during a period of six months. The lowest score was 20 points on a scale of 100. "This place," said the health officer, "was indescribably bad. Seventeen cows were huddled into two dark, foul sheds, with about 200 cubic feet of air space to each cow. The water supply was grossly contaminated. The milk was poured from dirty milk pails into cans which stood in manure in a dirty stable yard. Everything was in keeping with this partial picture." This dairyman immediately took steps to meet the requirements of the scoring system in use, and his scores showed steady improvement visit by visit, the last score showing 62.5, which was above the average. The same health officer further states:

"Common justice demands that full credit should be given to the milk producers and to the city dairymen for their share in what has been accomplished. To anyone who was familiar with the conditions under which milk was produced and sold in this city a year ago, a visit to the dairy farms supplying us with milk at the present time would prove little short of astonishing. On every hand new stables have been erected and old ones improved, milk houses have gone up, stable yards improved and most important of all, better methods of milking, handling and transporting milk."

Many large dealers employ an inspector to give dairies supplying them with milk a rating on the basis of the score-card, requiring them to reach a certain standard or stop shipping milk. To illustrate: One large milk company added the following note to the list of prices: "These prices apply only to those dairymen whose premises are scored 60 per cent. or higher by the department of health. Those who score less than this will have a reduced price paid, and milk from dairies scoring less than 50 per cent. is not desired and will not be accepted."

Unless public sentiment demands a good quality of milk and consumers are ready to meet the increased cost, improvement must necessarily be slow.

JAMES ADDISON HICKS, of Kerens, W. Va., used to heal horses of the bots by the "laying on of hands." Before the

old mountaineer's death a few months ago, he was induced to tell the secret of how he did it.

"Why, it's not so terrible remarkable when you just know how," said Mr. Hicks. "You first catch your horse, then you bleed him in the mouth—the second bar in the roof—mind you, the second. I'll show you just how it is done if you hold that horse's head."

"After you bleed him you commence to rub him between the ears, continuing down his spine to the tip of his tail—the very tip of his tail, mind you."

"But that isn't all. You must jerk his tail good and hard, so it really surprises him; then slap him in the flank rather sharply, so he'll eye your advances coldly."

"I suppose you think that's all; but it ain't. Most important of all is the rhyme you must say. It ain't exactly poetry—blank verse, guess. Anyway, this is what you say, and you must say it three times or it won't do a mite of good:

"My wife walks over the land,  
Carrying three worms in her hand;  
One red, one black, one white,  
And they all shall die this night."

"I 'most forgot to tell you that I say 'My wife, because she's dead. A woman would say 'My husband' if he's dead; or 'My mother,' or any one who is dead. I have never failed to cure a case in sixty years, and people far and near know I do just what I claim."

"And you don't use any medicine?" queried the skeptical New Yorker.

"To be sure I do," was the indignant protest. "I'm no Dowieite, and don't believe in healing by the laying on of hands alone. I'm a commonsense Christian, and believe in combining just ordinary hoss sense with religion. That's why I follow the laying on of hands with a good dose of salts."

A veterinary surgeon would probably say that when the horse is bled the blood runs into the stomach and rouses the bot worms to gluttony. Then they die in their wantonness and the salts do the rest.—Magazine Section, *New York World*, Sunday, July 25, 1909.

## VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alumni Ass'n, N. Y.-A. V. C.	Sept. 7-10, 1909.	141 W. 54th St. Chicago.....	L. L. Glynn, N. Y. City. R. P. Lyman, Hartford, Conn. Horace E. Rice, Little Rock.
American V. M. Ass'n.....			
Arkansas Veterinary Ass'n.....	1st and 3d Thur. of each month	Lec. Room, La- val Un'y, Mon. ....	J. P. A. Houde, Montreal.
Ass'n Médécal Veterinare Fran- çaise "Laval".....	2d Fri. ea. mo. ....	Chicago.....	D. D. Tierney, Chicago, Ill.
B. A. I. Vet. In. A., Chicago.....	....	San Francisco.....	J. J. Hogarty, Oakland.
California State V. M. Ass'n.....	2d Tues. ea. mo. ....	Ottawa.....	A. E. James, Ottawa.
Central Canada V. Ass'n.....	....	Chicago.....	J. M. Parks, Chicago.
Chicago Veterinary Society.....	....	Denver.....	M. J. Woodliffe, Denver.
Colorado State V. M. Ass'n.....	....	New Haven .....	B. K. Dow, Willimantic.
Connecticut V. M. Ass'n.....	....	Rochester.....	J. H. Taylor, Henrietta.
Genesee Valley V. M. Ass'n.....	....	Athens.....	P. F. Bahnsen, Americus.
Georgia State V. M. A. ....	Nov. 16-17, 1909.	Bloomington.....	Louis P. Cook, Cincinnati.
Hamilton Co. (Ohio) V. A. ....	....	Louisville.....	J. H. Crawford, Harvard.
Illinois State V. M. Ass'n.....	Jan. and Aug. ....	Indianapolis.....	W. A. Swain, Mt. Pulaski.
Illinois V. M. and Surg. A. ....	January, 1910 .....	Ft. Dodge.....	E. M. Bronson, Indianapolis.
Indiana Veterinary Association.....	Jan. 4-5, 1910 .....	Manhattan.....	H. C. Simpson, Denison.
Iowa Veterinary Ass'n.....	Monthly.....	Not decided .....	B. Rogers, Manhattan.
Kansas State V. M. Ass'n.....	Oct. 13, 1909 .....	Philadelphia.....	D. A. Piatt, Lexington.
Kentucky V. M. Ass'n.....	....	Waterville.....	S. Lockett, Glenolden.
Keystone V. M. Ass'n.....	....	Baltimore.....	E. P. Flower, Baton Rouge.
Louisiana State V. M. Ass'n.....	....	Boston.....	A. Joly, Waterville.
Maine Vet. Med. Ass'n.....	....	Saginaw.....	H. H. Counselman, Sec'y.
Maryland State Vet. Society.....	....	Stillwater .....	Wm. T. White, Newtonville.
Massachusetts Vet. Ass'n.....	....	Kansas City.....	Judson Black, Richmond.
Michigan State V. M. Ass'n.....	....	St. Joseph.....	G. Ed. Leech, Winona.
Minnesota State V. M. Ass'n.....	....	Helena.....	J. C. Robert, Agricultural Col.
Mississippi State V. M. Ass'n.....	....	Grand Island.....	B. F. Kaupp, Fort Collins, Colo.
Missouri Valley V. Ass'n.....	....	Ithaca .....	F. F. Brown, Kansas City.
Missouri Vet. Med. Ass'n .....	....	Wilmington .....	W. S. Swank, Miles City.
Montana State V. M. A. ....	....	Fargo .....	H. Jensen, Weeping Water.
Nebraska V. M. Ass'n.....	....	Columbus.....	J. F. De Vine, Goshen.
New York S. V. M. Soc'y.....	....	Up'r Sandusky .....	Adam Fisher, Charlotte.
North Carolina V. M. Ass'n.....	Call of Sec'y .....	Paterson, N.J. ....	C. H. Martin, Valley City.
North Dakota V. M. Ass'n.....	....	Philadelphia.....	Sidney D. Myers, Wilmington.
Ohio State V. M. Ass'n.....	....	Mon. and Que. ....	F. F. Sheets, Van Wert, Ohio.
Ohio Soc. of Comparative Med. ....	Annually .....	Providence .....	W. H. Martin, El Reno.
Oklahoma V. M. Ass'n.....	....	St. Louis.....	C. H. Sweetapple, Toronto.
Ontario Vet. Ass'n.....	Call of Chair .....	Reading .....	H. K. Berry, Paterson, N. J.
Passaic Co. V. M. Ass'n.....	Sept.....	Philadelphia.....	F. H. Schneider, Philadelphia.
Pennsylvania State V. M. A. ....	....	Sioux Falls .....	Chas. G. Thomson, Manila.
Philippine V. M. A. ....	....	Jan. Apl. Jy. Oct. ....	Gustave Boyer, Rigaud, P. Q.
Province of Quebec V. M. A. ....	....	4th Tues. ea. mo. ....	J. S. Pollard, Providence.
Rhode Island V. M. Ass'n.....	....	Call Exec. Com. ....	....
St. Louis Soc. of Vet. Inspectors. ....	....	2d Thu. ea. mo. ....	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A. ....	Jan. and June .....	Jan. 19th, 1910 .....	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn. ....	1st Wed. fol. the 2d Sun. ea. mo. ....	Los Angeles .....	B. T. Woodward, Wash'n, D.C.
South Dakota V. M. A. ....	Dec. 15, 1909 .....	407 Ill. Ave. ....	J. A. Graham, Sioux Falls.
Southern Auxiliary of California State V. M. Ass'n.....	....	St. P. Minneap. ....	J. A. Edmonds, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp. ....	....	White Riv. Jc. ....	H. R. Collins, So. St. Joseph.
Texas V. M. Ass'n.....	....	....	R. P. Marsteller, College Sta.
Twin City V. M. Ass'n.....	....	....	S. H. Ward, St. Paul, Minn.
Vermont Vet. Med. Ass'n .....	....	....	F. W. Chamberlain, Burlington.
Veterinary Ass'n of Alberta.....	....	....	C. H. H. Sweetapple, For.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo. ....	514-9th St., N. W. ....	Saskatchewan, Alta., Can.
Vet. Ass'n of Manitoba.....	Not stated .....	Winnipeg .....	M. Page Smith, Wash., D. C.
Vet. Med. Ass'n of N. J. ....	Jan. 13, 1910 .....	Jersey City .....	F. Torrance, Winnipeg.
V. M. Ass'n, New York City.....	1st Wed. ea. mo. ....	141 W. 54th St. ....	W. Herbert Lowe, Paterson.
Veterinary Practitioners' Club.....	Monthly.....	Jersey City .....	W. Reid Blair, N. Y. City.
Virginia State V. M. Ass'n.....	....	Hampton .....	A. F. Mount, Jersey City.
Washington State Col. V. M. A. ....	1st & 3d Fri. Eve. ....	Pullman .....	W. G. Chrisman, Charlo'svle.
Washington State V. M. A. ....	....	Seattle .....	R. G. McAlister, Pullman.
Western Penn. V. M. Ass'n.....	1st Wed. ea. mo. ....	Pittsburgh .....	J. T. Seely, Seattle.
Wisconsin Soc. Vet. Grad. ....	....	Grand Rapids .....	F. Weitzell, Allegheny.
York Co. (Pa.) V. M. A. ....	Sept. 7, 1909 .....	York, Pa. ....	J. P. West, Madison.
			E. S. Bausticker, York, Pa.

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